REFLECTIVE-RECIPROCAL TEACHING STRATEGY ON STUDENT TEACHERS' ACADEMIC ACHIEVEMENT AND ATTITUDE.

BY

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DECLARATION

I declare that this dissertation entitled, “REFLECTIVE-RECIPROCAL TEACHING STRATEGY ON STUDENT-TEACHERS’ ACADEMIC ACHIEVEMENT AND ATTITUDE TOWARD ECONOMICS” is my work, and that all the sources that I have used or quoted have been indicated and recognized by way of complete references.

DEDICATION

This research work is dedicated to God the Bishop and the Shepherd of my soul and to my children Samuel, Shalom and Sharon.

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My appreciation goes to God Almighty.

To my amiable supervisor, Prof.M.M.Van Wyk, for his support throughout my Master's program.

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ABSTRACT

Economics as a subject is one of the sciences that is required for any nation's development, but its teaching and learning has not being easy, which has resulted in poor student achievement. In search of solutions, this study has considered the reflective-reciprocal teaching technique and investigates its effectiveness on student teachers' academic achievement and attitude in the subject. Four Null hypotheses were formulated to guide this study. The study adopted the quantitative method of inquiry, using specifically a pre-test, post-test quasi-experimental design. Three Colleges of Education out of 22 federal Colleges of Education in Nigeria were purposively selected based on certain criteria to be the sites for the study. The sample for the study consisted of 178 second year Economics student teachers; the participants were randomly assigned to an experimental group or a control group. The pre-test scores of the participants was obtained using achievement test, numerical ability test questionnaire.

Participants in the experimental group were exposed to six weeks of teaching using the reflective-reciprocal teaching strategy while participants in the control group were exposed to the traditional method of teaching. The quantitative data collected was analyzed using descriptive statistics in the form of proportions, frequencies, means and standard deviations, independent t- tests and paired t-tests to compare differences between two groups, Analysis of Covariance (ANCOVA) and ANOVA for repeated measures. The Multiple Classification Analysis (MCA) aspect of ANCOVA was used to determine the magnitude of the performance of the groups.The findings of the study show that there exists a significant difference in the achievement of student-teachers in Economics when taught using reflective-reciprocal teaching strategies compared to the conventional method.

Based on the findings of this study, it is recommended that Economics student teachers should make effective use of reflective-reciprocal teaching strategies in the classroom in order to further enhance the achievement of their students in the subject. In addition, the Federal and States Ministries of Education should encourage the use of the reflective-reciprocal teaching strategies by organizing workshops for

educational trainers and teachers to better equip them in the use of thereflective-reciprocal teaching strategy. The use of reflective-reciprocal teaching strategies should be encouraged in other teaching subjects as well.

Keywords: Reflective-reciprocal teaching, reflective-reciprocal peer tutoring strategy, student teachers, skills, achievement in economics, student attitudes.

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LIST OF ACRONYMS

JAMB: Joint admission matriculation board

NCE: National Certificate in Education

RT: Reflective Teaching

RT: Reciprocal Teaching

RPT: Reciprocal Peer Tutoring

WAEC: West Africa Examination Council

ANCOVA: Analysis of Covariance

FRN: Federal Republic of Nigeria

CTI: Conventional Teaching Instructions

ANOVA: Analysis of Variance

EAQ : Economics Attitude Questionnaire

MCA : Multiple Classification Analysis

EFA : Explanatory Factor Analysis

FCE : Federal College of Education

EACOED: Emmanuel Alayande College of Education.

CHAPTER 1 : ORIENTATION OF THE STUDY

1.1 Introduction

Based on the researcher's experience as a lecturer in a College of Education for many years she observed that student teachers seem to need a reflective-reciprocal teaching strategy. Her view is that the current method used seems not to be effective which ultimately affects student teachers' ability to teach economics in the classroom.

The researcher sought to investigate the impact of the reciprocal teaching strategy on student teachers. Student teachers are expected to behave as leaders in the classroom and expected to pass on their own subject knowledge to pupils.

Some researchers have exposed reflective-reciprocal teaching as a viable alternative strategy to teaching Economics. Literature on that matter is replete in the field of education. However, many teachers have failed to implement the reflective-reciprocal in teaching of Economics. It is against this background that this study sought to assess the impact of reflective-reciprocal teaching on student teachers' attitudes towards Economics and the extent to which they model the right attitude to Economics learning.

The teaching and learning of Economics in secondary school has been characterized by diverse changes (Baumol& Blinder, 1991; Jephcote, 2004).This is crucial for a subject as important as Economics. Economics is a dynamic subject dealing with current and future problems; it touches everyone's lives closely; it is concerned with people and is therefore a very suitable subject to study at all levels (Walstad& Becker, 1994). It is significant to everybody and not just economists. It involves opportunity cost every time we make a decision, for example, in deciding whether to have more leisure time or to work overtime. It is also essential to individuals in making decisions that can maximize their satisfaction; to business organizations in maximizing profits; and to governments in providing a high standard

of living for their citizens. Economics also touches future issues such as alternatives to sources of energy when oil is depleted and how people's lives may be affected.

Given this significance, teaching Economics can be defined as a process through which young people obtain knowledge and acquire skills that contribute to the creation of wealth and to the contentment of human needs and wants (Baumol& Blinder, 1991).However, Becker (1997) noted that the field of Economics has placed too little value on the significance of teaching in recent decades and Economics teachers are not keeping up with progressive change nor moving away from the conventional teaching method of "chalk and talk".Ogunsola-Bamidele (1996) remarked that this method of "chalk and talk" is the most ill-treated of all teaching methods and not helpful in many respects; hence, there is a need for more engaging methods of instruction to boost students' interest and achievement in Economics An evaluation of the literature on Economic education suggests that Economics as a school subject together with how it is taught and learnt appears very much under-researched in many parts of the world (Jephcote, 2004; Walstad, 2001).Little attention has been given to the development of teaching and learning of Economics in recent decades (Walstad, 2001, Becker, 1997). The available confirmation from the last few years shows that passive learning based on traditional methods of "chalk and talk" seem to be the most broadly used teaching methods, characterizing the 20th century style of Economics teaching (Becker& Watts, 2001; Benzing& Christ, 1997; Siegfried, Saunders, Sonar & Zhang, 1996).

Concerns have been raised over of the years concerning the impact of teaching methods on students' attainment, and there are criticisms of a lack of knowledge and skills among the secondary school graduates and their incapability either to apply school knowledge to real life situations, or to converse effectively in workplaces(Becker, 1997).Although there have been many research studies on teaching and learning processes over the past century, there have been no significant improvements in the teaching and learning of Economics in our schools. These research studies show that there is no single common instructional strategy that is effective with all learners in all situations (Haigh &Katterns, 1984; McGee &Penlington, 2001; Westwood, 2006).

Being a lecturer at College of Education, the researcher can say that many student teacher education programmes present students with theoretical information and assume that this will be sufficient to prepare them to obtain practical knowledge in their initial years of practice, leading eventually to a state of expert professional knowledge. Our most wanted outcomes will not be achieved unless considerable changes are made to student teachers' education programs, for example by incorporating reflective-reciprocal teaching strategies.

Brownlee,Purdie and Bouton-Lewis (2001)state that helping student teachers to know and learn more effectively would enable these future teachers to encourage similar learning outcomes in the school children for whom they have responsibility. Several factors (such as learners' intent, poor mathematics background, qualitative nature of Economics, unhealthy teacher-student relationship, infrastructural provision, government factors, areas of policy making to mention but a few) have been adduced to be responsible for this trend. A major factor to be considered is the instructional strategy used in teaching the subject at the National College of Education (NCE) level. This is more so as those strategies are not based on self-construction of knowledge, self-assessment and social interaction among learners. As a result of the nature of Dynamics which is a mathematically oriented subject in Economics, teachers need to be reflective and explore cooperative teaching strategies for teaching it.

Many instructional strategies have been developed and found useful in economics. Examples are collaborative group strategies for student teachers (Adedigba, 2002), reform-based instruction (Barak &Shakhman, 2008), self-regulation strategy (Arsal,2010) and Predict-Observe-Explain strategies (Babajide, 2010) to mention a few. In spite of all this hard work towards improved teaching strategies, the performance of students is still very low since all these impressive methods do not translate into use by classroom teachers some of whom find it difficult to accept the paradigm shift. The researcher is of the view that if these improved teaching strategies are emphasized and used in training student teachers, they will master innovative teaching strategies in the course of their training and find it more convenient and easy to apply when they are in the field practicing as teachers.

Every teacher has an ethical and moral obligation to assist all students to realize their full potential (Orlich, Harder, Callahan, Trevisan, Brown & Miller, 2010). It is, therefore, imperative to create room for further search for instructional strategies that canappeal to and stir learners' interest and at the same time help to attain the objectives of economics education. To achieve preferred educational goals, teachers are required to make use of reflective-reciprocal teaching (RRT), reflect on their teaching goals and how these interface with the demographics and abilities of their students. This procedure will, according to Clarke (2007), allow the teacher to clarify their knowledge base, the content, and their students' learning styles and crystallize the pedagogy to be implemented. A way of doing this is through reflective teaching. Reflective teaching means looking at what you do in the classroom, thinking about why you do it, and thinking about if it works or not. It is a process of self-observation and self-evaluation. It is a means of professional development which begins in our classroom. It is paying critical attention to the practical values and theories which inform everyday action, by examining practice reflectively and reflexively (Bolton, 2010).

Another variable of interest in this study that affects students' achievement is the mode of entry into the National Certificate in Education (NCE) programme. The mode of entry into the NCE programme is in two forms: the direct entry handled by Joint Admission and Matriculation Board (JAMB) and preliminary studies handled by the colleges of education. The direct entry which is handled by joint admission is for students that have five credits in West Africa Examination Council (WAEC), while the preliminary studies handled by the colleges of education is for those students that have less than five credits in WAEC.

The numeracy ability of the Economics student teachers is another variable of interest which affects students teaching of Economics. Numerical ability is the capacity of a person to argue with figures and to calculate mentally. Economics as a subject was only theoretical before the introduction of the new Economics syllabus which incorporated some elements of Mathematics into the subject. The situation has been posing serious problems for students in Senior Secondary School classes partlyas a result of the carry over effects of the negative attitudes which they have towards Mathematics and ineffectiveness on the part of the teachers. The researcher

sought to investigate the effect of the reflective-reciprocal teaching strategy on student teachers' academic achievement in Economics. The researcher also looks into the moderating effects of mode of entry and numeracy ability on their achievement and attitudes in Economics.

1.2 Statement of the problem

There are concerns, complaints and comments from different stakeholders regarding the academic achievement of Economics student teachers in Colleges of Education in Nigeria. The researcher, through her experience as an Economics lecturer observed that the number of Economics student teachers who are making progress in their academics has been decreasing recently.

Student teachers' poor performance in economics has been an issue attracting the attention of researchers and educators in Economics. Their ineffectiveness is as a result of low student-teacher interaction. Adu and Ayeni (2004) are of the view that students' failure to ask questions and use of the lecture method were identified as the main cause of poor achievement in Economics. Their study demonstrated that the achievement of candidates in Economics is not only poor generally but continues to fall over the years. Below is the statistics of the three colleges result between 2010 and 2012(Table 1.1).

Table 1.1: EACOA Achievements in Economics from 2010 to 2012

CANDIDATES	2010	2011	2012
Total wrote	187	190	220
Total achieved at 40% +	51	55	65
% Achieved at 40% +	27	29	30

Source: OODF (2013)

Table 1.2: FCE OYO Achievement in Economics from 2010 to 2012

CANDIDATES	2010	2011	2012
Total wrote	105	111	120
Total achieved at 40% +	30	35	41
% Achieved at 40% +	28	32	34

Source: OODF (2013)

Table 1.3:FCE Abeokuta Achievement in Economics from 2010 to 2012

CANDIDATES	2010	2011	2012
Total wrote	125	137	141
Total achieved at 40% +	38	48	55
% Achieved at 40% +	30	35	39

Source**:** OODF (2013)

Tables 1.1 – 1.3 show how the student teachers are failing. Although there is an increase in the pass rate between 2010 and 2012 but still low.If it continues like this how will student teachers be able to teach Economics when they get to the classroom as a professional teacher? What could be the problem? Is it that they are not mathematically good or that they are not attentive enough in the classroom? Could the teaching strategy be the problem? The researcher is of the opinion that teaching strategy is one of the ways through which effective learning can be achieved. ? Economics as a subject was only theoretical before the introduction of a new Economics syllabus which incorporated some elements of Mathematics into the subject. The situation has been posing serious problems for students in Senior Secondary School classes somewhat as a result of the carry over effects of the negative attitudes which they have towards Mathematics and ineffectiveness on the part of the teachers. Researcher is of the opinion that teaching strategy is one of the way through which effective learning can be achieve. Researcher is of the opinion that the current teaching strategy seems not good enough for student teachers at college of education.

Previous researchers have focused on various strategies such as reform-based instruction, self-regulation strategy, collaborative learning, and hands-on activities as a means of improving student teacher's achievement in economics. However, student economics teachers' achievement in the subject has not given satisfactory results. Hence the current study aimed to measure the impact of reflective-reciprocal teaching strategy(RRT) and conventional teaching instruction strategy (CTI) on second year economics student teachers 'achievement and attitude towards Economics.

1.3 Aim of the study

The aim of this study was to measure the impact of RRT and CTI on second year Economics student teachers 'achievement and attitude towards Economics.

1.3.1 Specific objectives of the study

This study aims at achieving the following research objectives:

- To measure the impact of RRT on student teachers' academic achievements and numerical ability toward Economics;
- To determine if there a statistically significant difference in the academic achievement in Economics scores of second year Economics student teachers taught using RRTcompared to those taught using CTI;
- To find out how RRT affects the attitude of student teachers exposed to the RRT strategy compared CTI in Colleges of Education; and
- To establish if mode of entry affects academic achievement and attitude of Economics student teachers at Colleges of Education.

1.4 Research questions

This main question will be answer by researcher:

- How does a reflective-reciprocal teaching strategy impact on student teachers' academic achievement and numerical ability toward Economics?

Subsidiary questions:

- Is there a statistically significant difference in the academic achievement of second year economics student teachers taught using RRT compared to those taught using CTI?
- How does RRT affect the attitude of student teachers expose to the RRT strategy compared to the CTI strategy in Colleges of Education?
- Does mode of entry affect academic achievement and attitude of Economics student teachers at Colleges of Education**?**

1.5 Hypotheses formulated for the study

The following are the hypotheses formulated for the study:

Hypothesis 1

H_0: There is no statistically significant difference between the academic achievement and numeracy ability of second year Economics student teachers who participated in the RRT and those who do not.

H_1.There is a statistically significant difference between the academic achievement and numeracy ability of second year Economics student teachers who participate in the RRT and those who do not.

Hypothesis 2

H_0: There is no statistically significant difference in the academic achievement of second year Economics student teachers taught using RRT compared to those taught using CTI.

H_1: There is a statistically significant difference in the academic achievement of second year economics student teachers taught using RRTcompared to those taught using CTI.

Hypothesis 3

$H_{0:}$ There is no statistically significant effect of RRT on the attitude of student teachers toward Economics.

H_1:There is a statistically significant different effect of RRT on the attitude of student teachers toward Economics.

Hypothesis 4

H_0: There is no statistically significant effect of mode of entry on student teachers' attitude towards Economics

H_1: There is a statistically significant effect of mode of entry on student teachers' attitude towards Economics

1.6 Scope of the study

This study covered three selected Colleges of Education in South-West Geopolitical zone Nigeria. All available NCE II Economics students from the selected colleges took part in the study. Some aspects of Economics in the NCE course outline were taught. The study investigated the effect of usingRRTin teaching Dynamics to student teachers with a view of improving their achievement and attitude toward Economics. The influence of mode of entry and numerical ability were also investigated.

1.7 Research design and methodology

The research design for this study is quasi-experimental design which approximates the true experimental type. The purpose of the design is to determine cause and effect, and there is an intervention controlled by experiments (McMillan &Schumacher 2010).The situation that is common to quasi-experimental design is when one is trying to know the effect of something – one can give an intervention to one and treat the other one as a control. For a better understanding of the impact of RRT on student teacher's academic achievement and attitude, the researcher used an attitude questionnaire (short answer) and an achievement test (objective, multiple-choice) in a pre-test and post-test design. This research design introduced extra intensity and features into the research study as the outcome from one design can be used to improve reliability and compensate for the limitations of the other design (McMillan& Schumacher, 2010).

Quantitative research

Quantitative research methodology is the best method for this study since it is based on the compilation and assessment of numerical data, usually obtained from questionnaires, tests, checklists, and other official paper-and-pencil instruments (Gay, Mills &Airasian, 2011). The researcher chose quantitative research methodology as the researcher intended to study independent variables (RRTand CTI) and dependent variables (achievement and attitude).

Data collection instruments

The main research data collection instruments were a self-structured, closed-ended questionnaire (Appendix A1)and a self-developed achievement test (Appendix A2) and numeracy ability test (AppendixA3). The research questions in the study describe what is needed for student teachers to have the right attitude and to perform better in Economics. The methodology for this study is discussed in further detail in Chapter 4. The instrument was developed by the researcher and consists of two sections: Section A, demographic data and Section B,short questions. The instrument was given to two experts in Economics education for content and face validity. Their advice was incorporated into the items.

Method of data analysis

The quantitative data collected was analyzed using descriptive statistics in the form of proportions, frequencies, means and standard deviations, independent t-tests and paired t-tests to compare differences between two groups, Analysis of Covariance (ANCOVA) and ANOVA for repeated measures. The Multiple Classification Analysis (MCA) aspect of ANCOVA was used to determine the magnitude of the performance of the various groups in Economics. For significant interaction effects, graphical illustrations have been used to explain such effects. The results obtained in this study are as presented and discussed in Chapter 4.The sequence of the presentation and the discussion of the results are in accordance with the hypotheses formulated for the study

1.8 Significance of the study

It is projected that findings from this study will add to the many efforts made by educators in Nigeria to make student teachers, Economics teachers, parent/guardians, school administrators, curriculum planners, researchers and government see the need for a more helpful method in the teaching of Economics.

The findings from this study will provide lecturers of Economics courses with relevant information on relevant skills needed as a teacher and how to make teaching more lively and flexible. It will also provide them with information on how to have

meaningful dialogues with their students and colleagues. Findings from the study will enable curriculum planners to include suitable teaching strategies in the curriculum especially for the NCE programme.

The study will provide student teachers with the knowledge of the role of socialization in teaching, and to become aware of diverse cooperative teaching models, especiallyRRTwhichthey can use when they are practicing. The study also provides reference materials on the prospects of these strategies of Economics teaching for educators and researchers.

1.9 Chapters layout

Chapter 1: The background to the study, statement of the problem, research questions, hypothesis and purpose of the study, the primary aim of the study, secondary objectives, scope of the study, and significance of the study.

Chapter 2: The theoretical framework including the social constructive theory, social cognitive learning theory and reflective theory.

Chapter 3: The research design, variables in the study, selection of participants, instrumentation, research process as well as method of data analysis.

Chapter 4: The result of the analysed data.

Chapter 5: Discussion of the major findings, conclusions and appropriate recommendations there from.the

1.10 Definition of terms

Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses (Robbins inAnde,2005).

Student Teacher: According to Virginia Wesleyan College, a student teacher is a college student involved in a school-based field experience. Under the supervision of

a cooperating teacher, the student teacher gradually takes on more classroom management and institutional responsibilities.

Reflective strategy. Reflective teaching means looking at what you do in the classroom, thinking about why you do it, and thinking about if it works or not. It is a process of self -observation and self-valuation. It is a means of professional development which begins in our classroom. It is paying critical attention to the practical values and theories which inform everyday action, by examining the practice reflectively and reflexively (Bolton, 2010).

Attitude: attitude is “a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour” (Eagly &Chaiken, 1993).

Reciprocal teaching strategy. Reciprocal teaching is a cooperative learning instructional method in which natural dialogue models and reveals learners' thinking processes about a shared learning experience. Teachers foster reciprocal teaching through their belief that collaborative construction of meaning between themselves and students leads to a higher quality of learning (Allen in Cheshire,Friese, &Howell, 2005).

Achievement: To succeed in doing or producing something (Oxford dictionary, 2012)

Strategy: Is a general adaptation of the means placed at a general’s disposal to the attainment of the object in view (The Encyclopedia Britannica in Anoff, 1990).

Teaching: is an activity that finds its result in the learner not in the teacher (Aristotle cited in Noddings, 2003)Someone claiming to teach must produce learning in a satisfactory number of students (Scheffler and Smith cited in Noddings,2003).

Mode of entry: Method of admission into an institution.

Numerical ability test: An estimate of the capacity of a person to argue with figures and to calculate mentally, it’s also to measure their capacities in mental calculation.

Achievement Test: “Test that measure knowledge, skills, or behaviour” (McMillan & Schumacher, 2010). This measures an individual’s knowledge or skill in a given area or subject. It is a consistent tests measuring to a large extent what students have learned in a given content area (Woolfolk, 2010).

Attitude scale: An attitude scale consists of a set of statements to which an individual responds. The pattern of responses is then viewed as evidence of one or more underlying attitude.

Pre-test: A determining test for assessing students’ knowledge, willingness, and abilities (Woolfolk, 2010).

Post-test: A test given to students after completion of an instructional program and is often used in conjunction with a pre-test to measure their achievement and the effectiveness of the program.

1.11 Conclusion

In this chapter, the researcher presented the background of the study and purpose of the research, problem statement, objective of the study, hypotheses, scope of the study, research methodology and design, research instruments, data collection processes and data analysis methods. In Chapter 2, the researcher will review literature and theoretical frameworks regarding the nature of RRT and its impact on student teachers’ academic achievement and attitude towards Economics.

CHAPTER 2 : LITERATURE REVIEW

2.1 Introduction

In Chapter 1, the background to the study, statement of the problem, research questions, and significance of the study, chapters' layout and definition of terms were presented. In this chapter, the literature review explores local and international literature as it relates to RRT strategy and student-teachers in the field of Economics,and discusses related literature around the attitude and achievement of student teachers in Economics. This chapter is structured according to five major points. Firstly, the theoretical framework which guides this research, strategies of education and RRTis defined and discussed. Secondly, teacher efficacy is discussed. Thirdly, a model of reflective practice is explored. Fourthly, the use of RRT strategy is discussed. Finally, the benefit of RRTin relation to Economics education is presented.

2.2 Theoretical framework underpinning this study

"A theoretical framework is a collected work of solid concepts, like a theory, but not necessarily so well worked out. A theoretical framework guides the research, determining what things will be measured and what statistical relationships to look for" (Van Wyk, 2000:1).

This study is based on a social constructivist approach to teaching and learning and the cognitive learning theoryas articulated by Kolb and Vygosky.

Constructivist theory

The constructivist philosophy is based on the presupposition that learners should be actively involved in the processes of thinking and learning (Ornstein & Hunkins, 2009). Woolfolk (2010) describes constructivism as a philosophy that emphasises the dynamic role of learners in constructing their own knowledge by building understanding and making sense of information.

In the current study, the constructivist approach of teaching and learning was adopted. Participants were expected to become more actively involved in building their own dynamic understanding in the choosing of a topic as they interacted with each other, and with any other learning tool. The experimental group of learners worked together as a team while the control group was expected to work individually. The cooperative work was expected to be a teaching and learning tool that minimised the dominance of the teacher in the learning setting while increasing individual learner participation in accordance with the principles of constructivism, as compared to CTI. The use of RRT was expected to generate a more learner-centred environment. Therefore, the current study aimed to determine if RRT was superior or not in applying constructivism compared to CTI.

Social cognitive learning theory

Socio-constructivism is a type of constructivism in which problem is solve, with learners interacting with each other and with the teacher (Cobb et al, 1992). Students are expected to become more actively involved after the initial help from the teacher as they interact with each other.

Learners working together as a team for practical activities can helplearners tomake more of an effort to try and understand atopic resulting in improved performance, rather than giving up quickly.It is easier for learners to help each other to move from the levelof difficlities to the level were they get help. The experimental group of students could work together in solving the problems while the control group was expected to just listen to their teacher and solve the problem individually. The teamwork was expected to be a teaching and learning tool that minimised the dominance of the teacher in the learning setting while increasing individual learner participation in accordance with the principles of constructivism compared to CTI. Because of the one-on-one situation provided by teamwork, students were expected to perform better while interacting with each other and with their learning tool, and internalise the (re)constructed new knowledge as they solved problems. Reflective practice is an iterative method rather than a one-off event, concerning “repeated cycles of investigating practice, adjusting practice and reflecting upon it, before trying it again” (Grushka, McLeod & Reynolds, 2005) There are three phases of reflective

teaching; the planning, teaching and debriefing phases. Throughout the planning phase the teachers have to use strategies such as cooperative learning, hands-on activities etc. (Clarke, 2007).For this reason, the researcher used two cooperative teaching strategies in reflective teaching. According to Orlich*et al.* (2010) cooperative learning is a learning strategy based on the small group approach to teaching in which students are responsible for both personal and group achievements. Cooperative learning's important feature is that it promotes helpful independence by teaching students to work and learn jointly in a group setting (Orlich*et al.*, 2010).There are many types of cooperative learning tools including: role playing, scaffolding, reciprocal teaching, peer tutoring, brainstorming and thinking aloud among others. Reciprocal teaching and the reciprocal peer tutoring are two of the cooperative learning strategies employed in this study.

Teachers promote reciprocal teaching when they believe that the combined assembly of sense between themselves and students resultsina higher quality of learning(Allan,2003).This strategy enables students to carry out diverse academic tasks. Students learn from one another as they exchange information and encourage their comprehension. As result, skilled readers are produced (Allen, 2003).Skills and strategies are enhanced throughout the reciprocal teaching procedure. Students are able to develop metacognitive strategies (Moore & Wilkinson, 2003). Inferential skills increase as students connect prior and present knowledge (Greenway, 2002).

However, Lysynchuck, Pressley and Vye(1990), Rosenshine, Meister and Chapman (1996), Taylor and Frye (1992) and Van Den Bos,Brand-Gruweland Aartnouse (1998) concluded that there is a problem with the time frame in which reciprocal teaching is taught. These studies recommended that reciprocal teaching should take place for a longer period of time, possibly an entire career. There was not enough time for students to transfer strategies learned in reading and listening settings. Taylor and Frye (1992) discovered that there were no differences between the experimental and control groups in their research. Reciprocal teaching was used to teach a bookish text to 14 Malaysian struggling readers of English. The outcome showed that in the first lesson these students could not make links between the events of the story to suggest an alternative resolution of the narrative. Afterward, their responses in the guided remind task showed that the four groups were able to supply the information making up the gist of the story. Nevertheless, the final

unguided recall task showed that two groups usually provided the assessment of their story and could remember only disparate details in the orientation of the story but could not remember major events. A major challenge confronting implementing of the reciprocal teaching strategy is guiding groups to share the task of monitoring their own comprehension through questioning, clarifying, summarizing and predicting (Raslie, Mikeng&Ting,2015).The study showed various positive effects of reciprocal teaching on struggling readers' comprehension of a narrative text, as evidenced by their unguided recall of the gist of the narrative. Out of the four groups, two were able to draw round the orientation, major events and resolution of the narrative, and these two groups confirmed better group dynamics in that the leader was effective in monitoring the group members' comprehension through questioning and helpful information given. The other two groups tended to recall disparate details concerning the setting and characters in the story and offered their assessment of the story, but the details were not linked as events. This preliminary study showed that using unguided recall to elicit the gist of the story is probably a better measure of comprehension than guided recall using comprehension questions or remaking the ending of the narrative because the latter does not tap into the skill of synthesizing a literary text. However, the findings are merely analytic due to the short duration of the reciprocal teaching involvement which does not allow skills in monitoring peer's comprehension to develop sufficiently. Further studies using a longer duration for the reciprocal teaching intervention with more scaffolding and modelling on using questioning, clarifying, predicting and summarizing strategies as well as training on leading group work may offer a more student-centred approach towards developing reading comprehension skills (Raslie, Mikeng&Ting,2015).

Reflective learning theory

Kolb's reflective model highlights experimental learning and is focus on the changing of information into knowledge. This takes place following the occurrence of the situation and entails an expert reflecting on the experience, achieving universal perceptive of the concepts encountered all through the experience and then testing these universal understandings in a new situation. With this approach the knowledge that is obtained is continuously applied and re-applied building on a practitioner's previous experience and knowledge (Kolb & Kolb, 2005).According to Slavin (1987),

readily available are two major theoretical perspectives associated with cooperative learning – motivational and cognitive. The motivational theories of cooperative learning stress the students' incentives to do academic work, while the cognitive theories call attention to the effects of working together(Dewey in Eggen &Kauchak, 2006).According to Dewey, reflective activity occurs while a person is faced with a perplexed, troubled or confused situation, prior to clarification and resolution. Therefore, for a teacher to accomplish his or her objective he or she should be a critical thinker, somebody who can ask him or herself these questions at the beginning of any learning situation.

- What do I look forward to from my students as a result of my lessons?
- What understanding, skills, wants and interests do my students have that must be engaged?
- What do I identify regarding the content, growth, inspiration and efficient teaching strategies that I can use to accomplish my objectives?
- What instructional resources, technology support and other material are available?
- How do I plan to support learners' development toward my objectives?
- How will I react if my learners are not on track? What is my backup plan? (Slavin, 1991).

And after each lesson an educator should ask him or herself the following questions:

- How do I feel about the lesson?
- What did I like about the lesson?
- What would I do differently if I could teach the lesson all over again?

For students to accomplish themselves in any field of learning, an educator must be informed of the social constructivist theory. This enables an educator to be well prepared and ready to appraise him or herself.

Reflection begins from a question whose helpful answer someone concerned needs to recognize. It progresses into ideas whose focus comparative to the activity from which it hopes to study is determined by the timing of the selected question. It should entail sustained questioning and especially self-questioning by an individual who

reflects privately. On the other hand, the model includes no elements that have not been used and evaluated in much reported practice. From the time when reciprocal teaching methods were introduced (Brown &Palinscar, 1989) many studies have been conducted to observe the efficacy of this method in diverse settings. A number of characteristics are common to many of the studies:

- Students are chosen from basic and junior high schools on the basis of their low scores in reading comprehension;
- The involvement generally consists of more or less 20 days;
- Improvement is considered by observable changes in the students' involvement in the discussions and by independent tests every day of their reading and retention of novel passages;
- Long-term maintenance, transfer, and generalization are measured using standardized tests.

In addition to developing reciprocal teaching, Palincsar, Brown and Campione (1989) provided its most extensive evaluation. Collapsing findings from across several replications of the intervention, the authors found that average seventh-grade students scored 75% correct on their reading retention of novel passages. Remedial students who participated in reciprocal teaching group discussions began, in general, by scoring with 30%-40% accuracy and reached a stable level of 70%-80% accuracy within 4 to 15 days. Ninety-eight percent of the students reached the criterion of 75% accuracy. Most of the students maintained their improved level of performance in the maintenance sessions and in the follow-up sessions that took place 8 weeks after the intervention had ceased. Findings also indicated that the reciprocal teaching method is superior when compared to alternative teaching methods (Brown &Palincsar, 1982).

Two cognitive theories are directly applied to cooperative learning: developmental and elaboration theories. The developmental theory believes that interaction between students around suitable tasks increases their mastery of critical concepts. Once students work together, they have to clarify and talk about each other’s perspectives, which leads to better understanding of the material to be learned. The

struggle to resolve possible conflicts through joint activity results in the improvement of higher levels of understanding.

Education has been accountable for the upliftment of the human condition. Alade (2004) observed that the major concern of education is the raising of human conditions. In the course of education, individuals are able to increase their knowledge and skills, accept new manners and be able to survive in society. In the same vein, Oderinde (2005) opined that all over the globe, education plays a very significant role in the improvement of the individual, society and the entire nation.

To ensure that the outcomes of education are achieved especially in Economics teaching, Economics teachers are compelled to consider different teaching strategies and methods. By pursuing these new strategies and methods, Economics teachers will be able to initiate teaching and learning effectively so that knowledge, skills and positive attitudes may be optimized among learners in their response to the Economic environment. A variety of teaching strategies, methods and techniques are available, but this study focuses on cooperative learning, which can be utilised to immense benefit in the teaching and learning situation.

The worth of education at every level is extremely dependent on the worth and commitment of the teachers (Ajiboye, Adu &Amosun, 2005). The developed and developing nations have been making massive investments in education. Teacher salaries account for 70% to 90% of the education resources in most countries(Anderson,2004). The teacher determines the mood of the classroom and jointly with other members of group, the atmosphere and prospect of the school. A number of teachers prepare and carry out these fundamentals more successfully than others.

In spite of the importance of Economics to everyday life in the area of commerce and industry, the teaching of the subject in Nigeria is characterized by many inadequacies. Nigeria's secondary school teachers of Economics have few materials on the teaching of Economics to work with. Audio-visual aids are either not available in sufficient quality, or what is available is usually inappropriate. This has affected the efficiency of teaching of Economics. (Adu, 2002; Obemeata, 1991). Although, there

is an increase in the number of students that are taking the subject, achievement in Economics has not been as good as it has been. Economics as a subject was only theoretical before the introduction of a new Economics syllabus which incorporated some elements of Mathematics into the subject. The situation has been posing serious problems for students in Senior Secondary School classes partlyas a result of the carry over effects of the negative attitudes which they have towards Mathematics and ineffectiveness on the part of the teachers.

In-service teachers are used to the mode of the “chalk and talk” teaching method and adjustment is difficult because they were taught that way. That is why the researcher is of the opinion that it is best to ‘catch them young’. If student teachers can be taught and then practice RRT at Colleges of Educationputting it into practice when they get to the class room will not be difficult.

2.3 Strategies of teaching

A teaching strategy comprises the values and methods used for instruction. Effective teaching strategies assist students in learning, develop critical thinking skills, and keep students on task. The objective of a teaching strategy is to facilitate learning, to motivate learners, to engage them in learning, and to help them focus. It is important to vary instruction to not only keep the students' attention, but also to let them to work together with content in a variety of ways that are applicable to various learning styles. A teaching strategy comprises the values and methods used for instruction. Usually teaching methods include lecture, class participation, collaboration, demonstration, project-based learning, or memorization, but some combination of these usually results in the most effective strategy(Boundless,2015).

To accomplish learning educational goals teachers have to reflect on their teaching goals and how these connect with the demographics and capacity of their students. This way will, according to Clarke (2007), allow the teacher to simplify their knowledge base, the content and their student learning styles and develop the pedagogy to be implemented. In choosing instructional strategies, teachers have to think about the challenges that the students may come across and strategies to help them students in overcome them. Teachers have to evaluate the lesson goals and

identify the point at which difficulties may surface. A way of doing this is through constructivism which is learning in an active situation through which new knowledge is acquired by building on prior knowledge and metacognition, which involves monitoring students thinking and behaviour as they regulate what they do and think while having an experience in teaching (Hart, Dixon, Drummond&Mclntyre, 2004).

Reflective Teaching

Reflective teaching is a way of looking at how you perform in the classroom, think on why you do it, and consider if it works or not. It is a method of self-observation and self-valuation. It is a means of expert development which starts in the classroom. It is paying significant interest to the useful ideals and theories which inform daily deeds, by investigating practice reflectively and reflexively (Bolton, 2010). Dewey recognizes that reflection assists our individual development; it is the way by which we free ourselves from a solo point of view and the likely unhelpful effects of single point of view.

Reflections can be described as any kind of thought about one's practice. One effect of the cultural pre-dominance of technical-rationalism is that any kind of thinking about one's practice tends to get described as reflective. Reflective teaching is against 'route action' which is controlled by 'tradition', by institutional expectations and definitions (Pollard & Tann, 1994). Therefore, a reflective teacher has need of personal qualities of open-mindedness in engaging the claims of a series of views or theories, accountability in the willingness to surrender to the influence of consistency and intensity of commitment (Pollard & Tann, 1994).

The reflective teacher is one who attempts to convey development in their practice by applying significant thinking to their situation, a move which is modulated by their approval of that situation's rareness and its resistance to ready-made descriptions and interpretations. "Reflection is a key part of the peer observation cycle" (Bell, 2001).The aims of this study are to establish the types of self-reflection in which teaching engages in peer examination of teaching. The researcher wanted to appraise the efficiency of the self-reflective component of the peer examination

employed in supporting reflection and to discover the aspects of teaching practice that teaching is focused on.

Reflective practice is an iterative process rather than a one-off event, involving "repeated cycles of examining practice, adjusting practice and reflecting upon it, before trying it again" (Grushka, McLeod & Reynolds, 2005). Young's (2006) description of reflection, which is from the work of (2006), is that: "reflective processes engage creation of sense about the practice. This is essentially collaborative. The resulting understanding provides an initial point for adapting practice". This description fits well with the collaborative nature of the peer observation exercise and with the researcher's aim of supporting student teachers to improve their teaching and their understanding of their teaching.

Kahn*et al.*(2006) noted the following benefits of reflective practice for academic improvement:

- Improved ability for reflective processes;
- Improved capacity for practice; expansion of personal qualities (e.g. enlarged self-confidence);
- Establishment of helpful relationships among individuals involved in the reflective processes; and
- Change of practice.

Reflective practice also enhances academics' ability to mentor and develop others (Bell, 2001). Reflection can be facilitated using what Kahn *et al.* (2006: 8) called ''directed reflective processes grades". When all other factors are assumed constant, teacher knowledge and class size are also found to be significant predictors of student assessment scores.

Research has revealed that teachers who deliberately self-reflect have increased self-assurance and are likely to promote additional positive learning environments and higher student attainment. Reflective practice assists one to observe and evaluate during preparation in order to make pedagogical choices suitable to diverse learning scenarios, such as deliberately taking into account how one might move

towards a web-based course with online engagement techniques rather than unconsciously attempting to duplicate the face to face method. To use reflective practice, one has to uphold the wish to learn more about oneself as a teacher and be dedicated to iterative development. As a reflective teacher it is suitable to ask these six questions at the beginning of any learning situation.

- What do I expect my learners to know and able to do as a result of my instruction?
- What knowledge, skills, needs and interests do my learners have that must be taken into account?
- What do I know about the content, development, motivation and effective teaching strategies that I can use to accomplish my objectives?
- What instructional materials technology, assistance and other resources are available?
- How do I plan to asses' learner progress toward my objectives?
- How will I respond if my learners are not on track? What is my backup plan? (Slavin, 1991).

Reflective teaching is grounded in constructivism and metacognition where students and teachers are exposed to teaching and learning skill under the inspection of their peers and tutors or college managers who critique their ideals (Clarke, 2007).Reflection, according to Clarke (2007), refers to thoughts about real teaching which involves the thinking of the teacher before, during and after a lesson. This teaching strategy has not been given enough attention in the classroom. At the level of student teachers, it will be useful to train teachers who can adopt them then practice them later in their careers.

Reciprocal teaching

Reciprocal teaching recognizes that cognitive improvement happens when original concepts learned during social interactions turn out to be internalized and made one's own. Thus, reciprocal teaching provides a situation in which students, with the help of the teacher and well-informed peers turn out to be increasingly skilful at applying understanding strategies while reading. Reciprocal teaching is based on Vygotsky's (1978) theory of the basic task of social interaction (dialogue) in the

enlargement of cognition. Thinking loudly and conversation of thoughts assist in explanation and amendment of thinking and learning, as a result developing cognition. Vygotsky's theory of Zone of Proximal Development (ZPD)is important inidentifying suitable text and scaffolding performance to sustain student success (Gallowayin Foster &Rotoloni, 2005). Text must be at a stage that can be efficiently shared, not too simple and not too complicated. Proper support and feedback must be given to aid learning throughout reciprocal teaching activities (Oczkus, 2003).

Reciprocal teaching is a planned strategy advocated by many reading experts for developing comprehension skills (Palinscar& Brown, 1984). In reading, reciprocal teaching involves students making predictions when reading, questioning themselves concerning the ideas in the text, looking for explanations when perplexed, and summarizing content (Pressley, 2002). A modification of reciprocal teaching can be useful for developing comprehension of mathematical word problems. The four major components of this adapted approach are:

- Descriptive;
- Searching;
- Brief; and
- Preparation.

Throughout a reciprocal teaching class on mathematical word problems, the students are separated into small groups, and one student is assigned the position of leader. The leader asks the group members to silently read a word problem. Later, when the entire group has read the problem, the leader asks for vocabulary or phrases that need to be clarified. Any group member can provide the meaning of a word or phrase. After all words and phrases have been clarified, the leader uses questions to recognize the key parts of the problem. The group leader then summarizes the purpose of the word problem. The leader guides the group in devising a plan to answer the problem. The steps and operations necessary to solve the problem are listed. Once the plan has been checked to make sure that it makes sense, the mathematical word problem is solved. Solving the problem may be done independently or jointly. Following the solution of the problem, a new leader is chosen to assist in solving of the next problem.

It is very important for students to have the right attitudes and perceptions toward Economics courses in order for them to excel in Economics. These would help them to gain knowledge of Economics in a more enjoyable manner. This is proven by Karstensson and Veddar (1974) in their study of students' attitudes. They found a statistically significant and positive relationship between students' pre-course attitudes and course grade in economics when scrutinizing students' interest in the subject and its usefulness to college and post-college work.

In addition, student individuality type has to do with academic performance in Economics. Student performance can be affected by attitudes and attitudes can, in turn, affect student performance. Not much work has not been conducted in determining how Economics courses have transformed student attitudes and how this has altered over time. Positive attitudes and insight in the direction of Economics can be produced if student seniors give useful information on the topic and perform well in Economics. The less anxious the students, the more they will take pleasure in the subject, and the better they will achieve in economics(Van Wyk,2011).

Economics offers alternatives that have an effect on nearly all aspects of our life. It is important to all and sundry and not just economists.Opportunity cost occurs every time a decision is made,forinstance, in deciding whether to have extra free time or to work overtime. Economics is essential to individuals in making decisions that can maximize their fulfilment; to business organizations in maximizing returns; and to governments in providing a high standard of living for their citizens. Economics also touches future issues such as fossil fuel and electricity and the impact of availability / lack of availability on industry and private individuals. Benzing and Christ (1997) observe that many Economics teachers have transformed their teaching styles in recognition that student attitudes and personalities are essential in determining academic success. It is also presumed that preliminary economics courses have become complex courses because of the three aspects necessary in mastering the subject: theories, analysis and application. In economics education literature, there is a lot written regarding the significance of math skills and basic economics being mastered by students to do well in economics courses.Bachan and Reilly (2003) established that math test scores had a strong and important effect on performance

in the economics course. They found that performance in SSCE mathematics exercise has a strong influence on A-level achievement in Economics. Further, they found that students who were asked to do a remedial math course did significantly worse in the economics course than did students who were not ask to do remedial math course.

Reciprocal teaching is a student-centred instructional strategy where students and teachers exchange roles in a lesson. It is a cooperative learning instructional mode in which normal dialogues form and expose learners' thinking processes concerning a joint learning experience (Foster&Rotoloni, 2005). Teachers promote reciprocal teaching with their belief that the combined construction of meaning among themselves and students makes for a higher quality of teaching (Allan, 2003). Students take possession of their role in reciprocal teaching as they feel relaxed expressing their facts and opinions in open conversation. Reciprocal peer tutoring is an involvement in which one student provides teaching support to another student. Peer tutoring ranges from the familiar encounter of play to the most difficult activities of collaboration in which persons help one another and study by doing so.In this process, students function reciprocally as both tutors and tutees. Research has revealed that both tutors and tutees gain massively from participating in reciprocal peer tutoring (Slavin, 1991; Griffin & Griffin, 1997). Reciprocal teaching increases students' self-assurance and understanding and use of strategies and in their enjoyment of learning.

Students become teachers and work as a group to contribute meaning to a text in reciprocal education as a strategy of cooperative groups (Palincsar, 1987). Teachers and students set up a dialog about a section of text. The dialog is prepared using four strategies:

- Summarise;
- Generate questions;
- Clarify; and
- Predict.

Steps for the establishment of reciprocal education

The teacher distributes a passage of a text to every student of the group. All students read the passages and, in writing, summarizes, clarifies or predicts based on the passage. The teacher as the most important member of the group initiates the questions. A member of the group answers, using the text to sustain his or her response. The student who answered the question asks another one and the procedure repeat itself. The teacher shapes and explains the four strategies of summarize, generate questions, clarify, predict. The teacher starts the conversation with the students in small groups. The students practice the strategies as they get the response from the teacher. There are opportunities for students to grow skills in group interactions and in working with others that are essential in today's world, through cooperative learning as an instructional methodology. Cooperative learning has to result in positive effects on student achievement and retention of information. With this methodology, students are more liable to obtain critical thinking skills and metacognitive learning strategies such as learning how to become skilled at work in small group cooperative settings compared to listening to lectures.

Concerning the role of the teacher and the interpersonal nature of learning, it is obvious that the student does not construct knowledge in segregation, thanks to the teacher who fulfils various roles – transmitter of knowledge, entertainer, supervisor or guide of the learning process, and educational researcher. The teacher is an organiser and also a mediator in the assembly of the pupils with knowledge. There is no agreement concerning the knowledge and skills that a good teacher must possess. The teacher is an intermediary involving the knowledge and the learning of their students and thus shares the benefits of cooperative learning. The teacher can use the approach of cooperative learning in the classroom to encourage a feeling of involvement. Through reciprocal strategies teachers can assist students to accomplish what they think they cannot accomplish, by coordinating their hard work with those of their contemporaries to complete a task.

Cooperative learning activities

For achievement in the course of teacher's careers and life, they should take into account the following suggestions concerning cooperative learning processes.

- The bigger the group the more skilled the members need to be; small groups from two to five members are ideal;
- For everybody to learn from the differences of others diverse groups should be created.
- Be certain that the students understand their roles and their tasks in the group. Explain the list of roles to the group for them to select, or give them their particular roles.
- Model skills of collaboration and joint respect.
- Persuade group members to listen, let others speak, request for help if needed, reach agreement and finish a task in the allowed time.

Walk in the midst of the groups as they are working. Employ friendly reminders of procedure if needed. If need be, teach procedure once more (Macpherson, 2007).

Through this teaching strategy students can have the chance to work with diverse people in the class during the course of the year.

Cooperative learning activities improve collaborative thoughts and regular giving and receiving of explanations has the prospect of raising deepness of understanding, excellence of reasoning, and the exactness of long term retention. Several studies have examined the effects of cooperative learning methods on student learning; those who were taught by cooperative methods learned and retained significantly more. Allen and Van Sickle (1984) conducted a study which concerned low achievement students. The outcome of the study revealed that the cooperative learning group scored considerably higher compared to the control group. A study conducted by Perrault (1983) established that cooperative learning resulted in considerably higher accomplishment in industrial arts students at the knowledge and comprehension levels of Bloom's classification, but not at the application level when compared to students taught by other methods.

In a review of 46 studies related to cooperative learning, Slavin (1983) found that cooperative learning resulted in significant positive effects in 63% of the studies, and only two studies reported higher achievement for the comparison group. Van Wyk

(2010) examined the relationships between students' attitudes toward cooperation, competition, and their attitudes toward education. The results of the study indicated that student cooperativeness, and not competitiveness, was positively related to being motivated to learn. Students taught by cooperative strategies assumed that they had learned more from the lesson than did students taught by competitive strategies. In a study concerning basic and high school students who were taught nutrition, Todd and Wodarski (1980) established that 95% of the basic students enjoyed the cooperative learning activities.

Cooperative learning is considered to be an efficient means to improve teaching and learning processes in the classroom. This transformation from a teacher-centred method to an active learner-centred method was set in the new education policy structure (Department of Education [DoE] 2005). Within the NCS curriculum, but specifically in Economics, it is of critical importance that learners learn how to gather relevant information. The learner has to identify problems and find solutions to these challenges by means of creative and innovative thinking in real-life situations. To ensure that the outcomes of Economics teaching are achieved, Economics teachers are compelled to consider different teaching strategies and methods. By pursuing these new strategies and methods, Economics teachers must now initiate teaching and learning environments effectively so that knowledge, skills and positive attitudes may be optimized among learners in their response to the socioeconomic environment.

A large variety of teaching strategies, methods and techniques are available, but this study focuses on different cooperative learning teaching techniques, which can be utilised to immense benefit in the teaching and learning situation. The researcher contends that Economics teachers should strive to present their subject in ways that are meaningful and learner-centred. If this can be achieved, learners can be engaged efficiently in the subject, and an interest in the learning content may be evoked. According to Slavin (1994), by establishing excellent modes of teaching such as cooperative learning teaching techniques, Economics teachers create powerful and sustainable learning environments to accommodate and enable diverse learning styles in the subject.

2.4 Teacher efficacy perspective

The literature explaining the effects of teaching effectiveness on teaching performance is recognized on the basis of the social cognitive theory. Bandura (1997) concluded that the evidence across studies is reliable in showing that "perceived self-efficacy" contributes considerably to levels of motivation and performance accomplishment. Bandura (2000) embraced an incorporated perspective for human performance in which social influences work through psychological mechanisms. Teachers' personal ideas and convictions about their own performance havea lot of influence on the final performance.

As explained by Gibson and Dembo (1984), teachers who believe student learning can be influenced by effective teaching and who also have confidence in their own teaching abilities would persist longer, provide a greater academic focus in the classroom, and exhibit different types of feedback than teachers who have lower expectations concerning their ability to influence student learning. Research on efficacy of teachers suggests that behaviours such as persistence ina task, risk taking, and use of innovations are related to degrees of efficacy of cooperative learning as a teaching approach.

Cooperative learning is based on the belief that education should be learner-centred and learner-directed, that learners can be teachers and that the teacher is a guide and facilitator rather than the source of all knowledge and direction. Cooperative learning has the potential to make a positive contribution to the academic performance, social skills and self-image of learners.

Teachers' beliefs and convictions about their own performance have much influence on the actual performance. Sapon-Shevin and Schniedwind (1991) hold the view that cooperative learning is necessary in any teaching-learning situation, because this particular strategy "can promote educational excellence for all children regardless of race, class, or gender, and can supply students and teachers with the experience and prospect of active involvement in controlling and changing the spheres of their lives". Adams and Hamm (1996) declare that cooperative learning as a teaching strategy is one of the accomplishment stories in the revolution of education over the

past decade. Their research has focused on the use of cooperative learning activities in the classroom where students jointly and creatively identify problems and generate practicable solutions.

Cooperative learning is a very prepared way of teaching. Economics teachers should thus be completely knowledgeable regarding what it entails. When introducing it to learners for the first time, teachers will have to be very tolerant because the learners will experience it as new and may only respond gradually. Economics teachers must think clearly regarding the worth of cooperative learning as an efficient teaching method. Their teaching style must be modified and be flexible even if it does not produce the required results. Economics teachers must also bear in mind that cooperation is empowerment. Cooperative learning has the possibility of making a positive input to the academic performance, social skills and self-image of learners. In the view of the researcher, cooperative learning techniques have the potential to, on the one hand, arouse the improvement of thinking skills, and on the other, develop social relations essential for cognitive growth and effectual learning. The cooperative learning procedure entails diverse teaching techniques like team assisted individualisation, Team-Games-Tournaments, Jigsaw III, Cooperation Integrated Reading and Compassion, Learning Together, Student Teams-Achievement Division, Team Assisted Individualisation, Academic controversy, and Group Investigation. Cooperative learning is one of the most widespread and fruitful areas of theory, research, and practice in education. Cooperative learning is considered to be an effective method to improve teaching and learning processes in the classroom (Johnson and Johnson 1998). Arising from this approach, the researcher therefore explores the current status of Economics student teachers' use of cooperative learning teaching techniques.

Griffiths and Tam (1992) cited in Poblete (1999) categorised reflection into two forms: reflection-in-action and reflection-on-action. Reflection-in-action refers to what happens when one is presented with novel puzzles. The resolving of these puzzles in the context of action, according to Schon (1983), unites means and ends, research and practice, and knowing and doing. This type of reflection is personal and private. It occurs as an action is going on and the reaction is rapid i.e. act and react. Reflection-on-action on the other hand is seen as a procedure for studying

immediate, at-hand events in order to understand them and develop a conceptual framework for useful practice. It involves recalling one's teaching after the class. This is intrapersonal and occurs after an event might have taken place. Reflection-on-action includes:

- Involvement in a scenario (an action);
- Recording of the scenario (for getting a stable idea);
- Determinations, interpretations and evaluation;
- Formation of educational construal; and
- Confirmation to determine whether the construal has meaning to other practitioners (Garman, 1989 in Problete, 1999).

Another type of reflection is a reflection-for-action which occurs before an event takes place. All is embedded under reflective practice. Reflective teaching is a means of professional development which begins in the classroom. It is paying critical attention to the practical values and theories which inform everyday action, by examining practice reflectively and reflexively (Bolton, 2010). Dewey (1933), in his concept of "reflective inquiry", viewed the students as inquirers and active participants in learning. He assumed that the interaction of subject-matter and method of inquiry could not be ignored in schooling. Following this line of thinking, the reflective teacher makes decisions based on a problem-solving paradigm (Orlich*et al.,* 2010). Problems are not viewed as obstacles to overcome, but as opportunities to be met. Teachers reflect on problems, and as part of a learning community, they call on others (i.e. their peer and senior colleagues) to reflect on identified problems. In such cases, they collectively list a series of alternatives that they can take. Ultimately, such a list is narrowed down to a set of actions that are ethical, just and educationally sound. Reflective teaching can be thought about in terms of asking searching questions about experience and can be conceptualized as both a state of mind and an on-going type of behaviour. Being a reflective practitioner at any stage in teacher development involves a constant, critical look at teaching and learning and at the work of the teacher (Harrison, 2009).

Reflective teaching deals with active research, critical thinking and professional enquiry. It also deals with thinking deeply to solve a given problem and in doing this

you ask a lot of thought provoking questions like: why do I teach the way I do? What are the principles underlining my teaching? Should I do it differently? What are the major problems that I face in my teaching? Why does a particular method work for student A or topic A but not for student B or topic B? What am I doing right or wrong in my classrooms? What made my lesson seem so successful/not successful?

2.5 Models of reflective practice

There are several models of reflection, some of which are presented below.

Argyris and Schon'smodel of reflective teaching

Argyris and Schon pioneered the plan of single loop and double loop learning in 1978. The theory was built around the recognition and adjustment of an apparent fault or error. Single loop learning is when an expert, even after an error has occurred and a rectification is made, continues to rely on existing strategies or technique when a similar circumstance again comes to light. Double loop learning involves the alteration of personal objectives, strategies or policies so that when a similar situation arises a new framing system is employed (Argyris& Schon, 1978) (Figure 2.1).

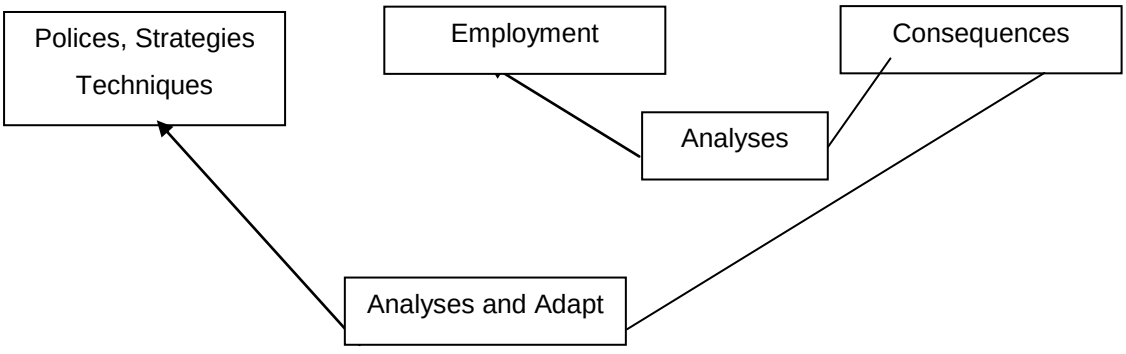

Figure 2.1: Adaptation of the Argyris and Schon*Double Loop Learning Model*

Schon himself introduced a number of years later the concept of Reflection-in-action and Reflection-on-action the summary of which is presented in Figure 2.2.

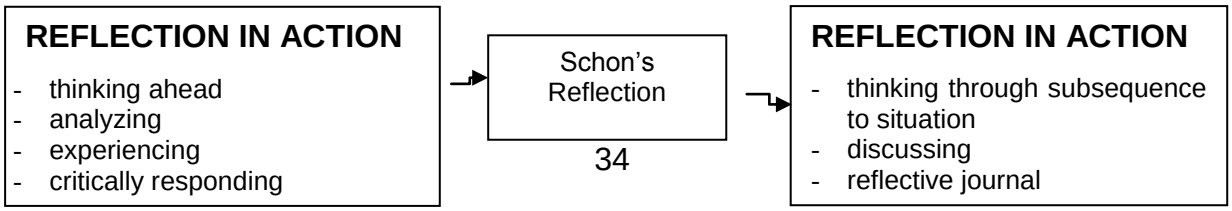

Figure 2.2: Schon's concept of reflection-in-action and Reflection-on-action Kolb's Reflective Model

This model highlights the idea of experimental learning and is centered on the conversion of information into knowledge. This takes place after the situation has occurred and entails a practitioner reflecting on the experience, gaining a general understanding of the concepts encountered during the experience and then testing these general understandings in a new situation. In this way the knowledge that is gained from a situation is continuously applied and re-applied building on a practitioner's prior experience and knowledge (Kolb &Kolb, 2005) (Figure 2.3).

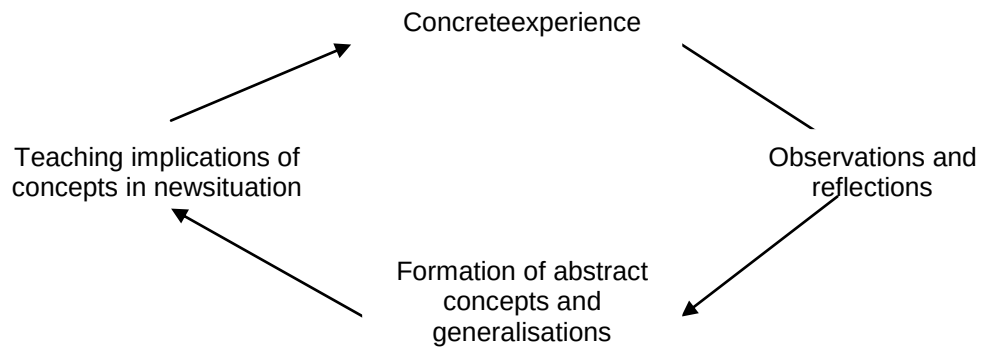

Figure 2.3: Kolb's reflective model
(Source: Kolb, 1984 in Kolb and Kolb, 2005)

Reflective practice occurs at all stages of the teaching process including planning, action (execution) and evaluation (Clarke, 2007). That is, the thinking about teaching, which involves the thoughts teachers have before, during, and after the actual enactment of a lesson. This construct is parallel to the thinking processes identified by Polya (1945). In his concept of problem solving, there are three phases: (a) Understanding, (b) Planning, and (c) Looking back.

According to Clarke (2007), teachers should engage in similar types of thinking before they teach a lesson. To achieve desired results, teachers should reflect on their teaching goals and methods and how these interface with the demographics and abilities of their students. This process allows them to clarify their knowledge base, the content, and their students' learning styles and to crystallize the pedagogy to be implemented (Clarke, 2007).

Teachers must consider the challenges that students may encounter and which strategies to implement in order to assist students in overcoming them. Polya's "looking back" phase is the reflective thinking that teachers engage in after they teach a lesson (Artzt&Armour-Thomas, 2002). At the end of the lesson, teachers evaluate the lesson goals and the actions of both themselves and their students as well as define the points at which difficulties emerged. They need to consider the strategies employed and when necessary make modifications. The self-assessment helps identify what was not addressed and the unexpected challenges of the lesson.

Characteristics of a reflectiveteacher

The following are the characteristics of a reflective teacher:

- Cares about students;
- Understands the social context of schooling;
- Question assumptions;
- Knows content;
- Identifies problems or issues;
- Collects relevant data;
- Constructs a plan of operation;
- Uses many instructional strategies;
- Practices problem-solving strategies;
- Thinks prospectively and retrospectively;
- Realizes that reflection is cyclical; and
- Evaluates the results and processes used.
  (Orliche*t al.,*2010)

Approaches to the use of reflective teaching

Reflective practice occurs at all stages of the teaching process.Leitch and Day (2000) state that the appeal of the use of reflective teaching by teachers is that as teaching and learning is complex, and there is not one right approach, reflecting on different versions of teaching and reshaping past and current experiences will lead to improvement in teaching. As Larrivee (2000) argues, reflective practice moves teachers from their knowledge base of distinct skills to a stage in their careers where they are able to modify their skills to suit specific contexts and situations, and eventually to invent new strategies. In implementing a process of reflective practice teachers will be able to move themselves, and their schools, beyond existing theories in practice (Leitch& Day, 2000).

Some reflective questions that the teacher can ask themselves or colleagues about a lesson include:

- What did you set to teach?

- Were you able to accomplish the set goal?
- What teaching materials did you use? Were they effective?
- What strategy(s) did you use? Were they effective?
- What kind of interaction occurred?
- Did you have any problem?
- Did you do anything different than usual during the lesson?
- Did you follow your lesson plan or deviate from it?
- Were your students really challenged?
- What aspect did they like most about the lesson?
- What would you do differently if given a second chance to do that same class?

Before a lesson a teacher can also do a self-reflection by asking questions such as:

- What are my greatest strengths and weakness as a teacher?
- What is the biggest problem that I am facing in my teaching (e.g. materials, class size, unresponsive student, lack of good communication among fellow teachers)?
- Reflect on a recent lesson, what worked well and why? What did not work well and why?
- Is your class student centered?
- Do you encourage learner autonomy?
- How?

Benefit of reflective teaching

The following are the advantages to be derived from using reflective teaching in the classroom. Reflective teaching:

- Develops the quality of teaching through continuous improvements.
- Gives educators new opportunities to reflect on and assess their teaching.
- Enables teachers to explore and test new ideas, methods, approaches, and materials.
- Provides opportunities to assess how effective the new approaches were.
- Provides opportunities to share feedback with fellow team members.

- Provides opportunities to make decisions about which new approaches to include in the school's curriculum, instruction, and assessment plans.
- Significantly increases student motivation.
- Recognizes individual progress.
- Enhances and develops forms of collaborative learning.
- Increases learner independence.
- Enhances confidence (Cruickshank, 1987).

Reflective teaching is effective at enhancing quality assurance in the teaching and learning process. Building it into daily routines is a realistic way of including it. This can be in the form of jotting notes on daily lesson plans, keeping a teacher's journal or scheduling a weekly review over drinks with a colleague, mentoring by senior colleagues. Consistent reflection will bring to light issues that need attention and provide opportunities for brainstorming with colleagues for possible solutions. It also bridges the gap between the micro and macro dimensions of teaching. Its use in teaching is a must and it is a necessary tool for effective and efficient teaching in Nigerian Colleges of Education. It is hoped that the experience shared in this research will stimulate thoughts in the student teachers about the value of reflection.

2.6 Conclusion

Reflective-reciprocal teaching is an an alternative method of instruction that Economicsteachers can use to improvethe attitude and achievement of student teachers. However, implementation relies on the lecturers at the Colleges of Education.Although RRTis time comsuming,it is appropriate for a course like Economics because of the involment of mathematics.

An evaluation of the literature on economic education suggests that economics as a school subject together with how it is taught and learnt appears very much under-researched in many parts of the world. However, through research such as this current study the effect of RRT can be determined. Therefore, this study will contribute to the already existing body of knowledge on the effect of RRT and CTI in the teaching of Economics.

CHAPTER 3 : RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The previous chapter was a critical description of RRT. Reflective-Reciprocal Teaching is a student-cantered instructional strategy in which students and teachers switch roles in an Economics lesson. This chapter describes the research methodology and design which is the assembly and analysis of data in order to accomplish the aim of the study. The aim is to investigate the impact of RRT on student teachers' attitudes and academic achievement in Economics in Nigeria, South-West College of Education. This study aimed at answering the following research questions:

1. How does a reflective-reciprocal teaching strategy impact on student teachers' academic achievement, numerical ability and attitude toward economics at aCollege of Education, Nigeria.

2. Is there a statistically significant difference in the academic achievement of second year Economics student teachers taught using RRT as compared to those taught using CTI?

3. How does RRT affect the attitude of student teachers exposed to RRT strategiescompared to CTI strategies in a College of Education?

4. Does mode of entry affect academic achievement and attitude of Economics student teachers at a College of Education**?**

3.2 Research paradigm or philosophy

Paradigms perform as perspectives that supply a rationale for the research and instruct the researcher regarding exact methods of data collection, observation and Interpretation (Blanche, Durrheim&Painter, 2006).WeaverandOslon(2006)see paradigms as "a pattern of beliefs and practices; its identification explicates

researchers ‘philosophical assumptions about their subject matter.” The researcher defines paradigm as a lens that makes her see her research work clearly. The researcher sought to measure the impact of RRT on student teachers’ academic achievements and attitudes toward Economics. In order to answer the central research problem this study adopted the post-positivist paradigm. According to Henderson (2011:342) “post-positivism provides another paradigm that can move positivism from a narrow perspective into a more encompassing way to examine real world problems”. In addition, “post-positivism emphasizes meanings, not unlike interpretive, and seeks to explicate social concerns” (Further&Ryan,2006 in Henderson, 2011:342).

Furthermore, because there is much about the human experience that is not observable but is still important e.g. feeling, thinking, post-positive psychologists came to reject the positivists’ narrow view that what could be studied was limited to what could be generalized (Grotty 1998 in Mertens, 2010:11). An example of a study conducted within the post-positivist paradigm was that conducted by Borman*et al.*(2007 cited in Mertens, 2010). They explicitly chose to operate within the post-positivist paradigm, which led them to use an experimental design in order to measure the effectiveness of a literacy development program. In the same vein, this study which sought to measure the impact of RRT on student teachers’ academic achievements and attitudes toward economics also employed a post-positivist paradigm.

The choice of this paradigm therefore enabled the researcher to comprehend and interpret respondents’ perceptions, attitudes, values and beliefs regarding the impact of RRT. Post-positivism allows for limitations, contextual factors, and the use of multiple theories within which research findings can be interpreted (McMillan& Schumacher, 2010). In this study, responses from participants have been elicited through a questionnaire, pre-test and post-test design approach to data collection.

3.3 Methodology

According to Giddings and Grant (2006), research methodology refers to the hypothetical assumptions and values that strengthen a particular research approach

and guides how a researcher frames the research question and decides on what procedure and methods to use. McMillanand Schumacher (2010) state that "research design refers to a plan for selecting subjects, research sites, and data collection procedures to answer the research question(s).The design shows which individuals will be studied and when, where and under which circumstances they will be studied." It is in light of what has been established concerning research methodology and design that the researcher, in this section, presents the methodological paradigm and research design, research site, population and sampling procedures, as well data collection, analysis and interpretation methods. Details of adherence to ethical considerations, the quality assurance measures used and the limitations of the study will be provided.

There are two major methodologies of collecting data in social research, namely qualitative and quantitative methodology. "Qualitative methods are use in research that is designed to provide an in-depth description of a specific, program, practice, or setting. Qualitative researcher study things in their natural settings, attempting to make sense of or to interpret, phenomena in terms of the meaning people bring to it" Mertens (2010). Quantitative research relies primary on the collection of quantitative data. It attempts to study behaviour under controlled conditions (Johnson &Christensen, 2004)

A quantitative method was chosen for this study because the study sought to investigate the impact of RRT on student teachers' attitude and achievement towards teaching Economics.

Quantitative research

Quantitative research methodology is the most appropriate design for this study because it is based on the compilation and examination of numerical data, usually obtained from questionnaires, tests, checklists, and other official paper-and-pencil instruments (Gay, Mills &Airasian, 2011).Quantitative research generates digital data or information which can be converted into figures. Measurable data are collected and analyzed in quantitative research.

The researcher chose a quantitative research methodology as the researcher intended to study independent variables, namely RRT and CTI and dependent variables such as achievement and attitude.

Characteristics of quantitative research methodology

Research methods and processes are established before the study begins. It mostly attempts to establish universal, context-free generalization. Ideally the researcher is detached from the study to avoid bias. Quantitative researcher usually employs experimental or correlational designs to reduce error, bias, and the influence of extraneous variables.This methodology aims to determine whether there is a relationship between the manipulated(independent) variable and some characteristic or behaviour of the participants(the dependent variable) (McMillan & Schumacher,2010).

3.4 Research design

Research design is the procedures for conducting the study, including when, from whom, and under what conditions the data will be collected. The research design indicates the general plan, how the research is set up, what happens to the subjects, and what methods of data collection is used (McMillan & Schumacher,2010).This research employed quasi-experimental design.

Quasi-experimental design

Quasi-experimental design approximates the true experimental type. The purpose of the design is to determine cause and effect, and involves an intervention controlled by experiments (McMillan &Schumacher, 2010).The situation that is common to quasi-experimental design is that one is trying to know the effect of something. An intervention is introduced to one and the other is treated as a control. For the better understanding of the impact of reflective-reciprocal teaching on student teacher's academic achievement and attitude, the researcher used an attitude questionnaire (short answer) and an achievement test (objective, multiple-choice) in a pre-test and post-test design. This research designs introduces extra intensity and features into a research study as the outcome from one design can be used to improve reliability

and compensate for the limitations from the other design (McMillan & Schumacher, 2010).The current study employed the use of a pre-test, post-test, by using questionnaires and an achievement test to measure the impact of RRT and CTI on the achievement and attitude of second year Economics student teachers.

Variables in the study

The **independent variable** is the teaching strategy manipulated at two levels:
1.Reflective-Reciprocal Teaching.
2.Modified Conventional Teaching.

There are two **moderator variables**:
1.Student teacher's mode of entry:
a. Preliminary Studies; and
b. Direct Entry.
2.Student teachers' numeracy ability.

The **dependent variables** are:
Student teacher's achievement in Economics.
Student teachers' attitude in Economics.

3.5 Selection of participants

There are 22 Federal Colleges of Education in Nigeria. N= 178 second year economics student teachers were selected from three colleges for participation in this study. The characteristics of students in these colleges, in terms of socio-economic status, learning environment and educational resources are almost similar. In purposive sampling the goal is to select a sample that is likely to be "information-rich" with respect to the anticipated outcomes of the study (Gall, Gall & Borg, 2007). Purposive sampling may help the researcher in discovering, gaining insight and understanding of a particular chosen phenomenon, which in this study constitute the problem of poor performance of Economics student teachers in selected Federal Colleges of Education. Despite the criterion of performance, the selected colleges present a convenient sample for the study since the researcher is an Economics

lecturer in this state so she has chosen the colleges based on her knowledge and experience with the colleges. The selected schools were randomly assigned to two groups, namely the experimental group and the control group. The sampling technique employed in this study was quasi-experimental research. In a quasi-experimental design, the independent variable is manipulated but the groups (experimental and control) are not equated (non-equivalent) prior to the manipulation. In this study the control group (n = 85) was taught by a lecturer with the traditional teaching method, while the experimental group (n = 93) was taught by the researcher with the reflective-reciprocal teaching strategy. The study follows quantitative research design method and used a pre-test and a post-test to collect data.

3.6 Instruments

Three instruments were used to carry out the study:

- Questionnaires – Economics' attitude questionnaire for student teacher (EAQ)
- Achievement Test in Economics for student teacher (ATEST)
- Numeracy ability test for student teacher (NATST)

Quantitative research data quality is controlled by establishingits validity and reliability. Validity determines whether the study actually measures that which is planned to be measured, and reliability ensures how constant the results are when the experiment is recurring a number of times in similar methodological circumstances. Quantitative researchers desire their measures to be reliable and valid.

Numeracy Ability Test for Student Teacher (NATST)

Numeracy is the ability to reason and to apply simple numerical concepts. The instrument was developed by the researchers and consisted of two sections. Section A gathers the demographic information of respondents such as name, college, sex and mode of entry while Section B consists of 07 items which the student teachers will solve in the space provided on the question paper to test their numerical ability level (See Appendix A3).

Validation of NATST

To validate NATST, the instrument was given to two experts in Economics education. Their advice and suggestion were incorporated into the items. The modified test items were administered to 35 pre-service teachers that were not involved in the main study to determine the reliability and internal consistency of the scores using the split-half method.

Achievement Test in Economics (ATE)

This instrument tested the student teachers' intellectual achievement related to various concepts in economics. The test consists of 20 multiple-choice objective test items. It has two sections with Section A containing demographic information such as name, college, sex and mode of entry while Section B contains the test items constructed as presented in Appendix A2. The alternatives for the questions range from A to C. One mark was awarded for each correct option and zero for wrong options. This means that the total marks obtainable is 20. The test items were generated to cover the cognitive domain of facts, perceptionand thoughts.

Validation of ATE

To determine the face validity of the instrument, the draft of the test was given to two experts in Economics education who went through it and made necessary corrections and suggested that five items be re-framed. The test was further administered to 30 student teachers from a College of Education not chosen for the study. The discriminating indices for each of the items and difficulty levels were computed by the researcher. The items with moderate difficulty indices of 0.4 to 0.6 were retained while ensuring that such items had a positive correlation with the entire test. The responses were used to determine the reliability.

Economics attitude questionnaire

One more dependent variable that was measured in this study was attitude. The effect of reflective-reciprocal and conventional teaching on student teachers 'attitude were determined.

To this end the questionnaire was administered to the participants in both groups. The administration of a questionnaire after the intervention was designed to decide

whether the attitude of student teachers in the experimental group had been raised by means of RRT compared to learners in the control group.

Questionnaires gave the researcher the exact figure of the respondents who strongly disagree, disagree, agree and strongly agree. The research actually measures that which it planned to measure. The researcher used questionnaires comprising closed-ended questions. The close-ended questions consisted of a four point Likert scale (strongly disagree, disagree, agree and strongly agree). A Likert scale asks persons to confirm their level of accord with various statements (Gall, Borg & Gall 1996:273).

Questionnaires have an introduction where the researcher introduces and gives details of the reasons the research is being conducted and requests the respondents to complete the questionnaires. To create a questionnaire that will generate a reliable and valid outcome the researcher initially decides what type of information is to be collected, determines how to conduct the questionnaire, constructs the first draft of questionnaire, amends the questionnaire, and requests colleagues who have Master Degrees to correct the questionnaire. According to Best and Kahn (1993:208), validity is that value of a data-gathering instrument or process that enables it to measure what is supposed to be measured. In this study the questionnaires measured the effect of RRT on student teacher's attitude and achievement toward Economics. The validity of questionnaires as data collection instruments was assured by assessing them through every step of their construction. The content of the literature review was included in the questionnaires to ensure their content validity.

3.7 Research procedure

The following time schedule was used for the study:

- 1st-2nd weeks: Visitation to the college used as experimental group.
- 3rd week: Visitation to the college used as a control group.
- 4th week: Administration of pre-test achievement test and numeracy ability test.
- 5th-9th weeks: Application of treatment on experimental and control group.

- 10th week: Administration of post-test.

The questionnaires were administered by the researcher.

1. In the first two weeks of the study the researcher personally visited the participating lecturers who are the lecturers handling the Economics course in their respective colleges and discussed with them what her research was all about.

2. In the third week, the researcher visited the college used as the control group for briefing.

3. The fourth week was used for pre-test administration for all student teachers participating in the study using the achievement test and numerical ability test.

4. The fifth to ninth week was used for the implementation of the treatment for the experimental groups and the control group.

Procedure for Experimental Group 1: Reflective-Reciprocal Teaching Strategy.

Phase One: Preliminary Plan (teacher dominates)

Step 1: Student-Teachers were paired into heterogeneous small groups.

Step 2: The researcher provides student teacher with instructions on the content of the topic.

Step 3: The researcher teaches them how to use the RRT strategies:

- Predicting: Here the student teachers were encouraged by the researcher to make guesses on what the text or topic is going to be about e.g. how can we solve basic economics problems of our society? What is the importance of scale of preference? What do you think will happen if we make use of it?
- Questioning: ‘What’, ‘why’ and ‘how’ questions will be asked by the researcher about the section or text to build a shared understanding.

- Clarifying: Misunderstandings, misconceptions, Economics terms, and concepts are cleared by the research assistant.
- Summarizing: At this stage the researcher helped the student- teachers to get the main idea of the section, text or concept by summarizing it. E.g. what are the most important concepts or idea we learned in this topic?

Step 4: Student teachers practiced the usage of the strategies in small groups while the researcher facilitated their discussions and made necessary corrections where applicable.

Phase Two: Briefing / Reflection

Procedure for Control Group 1: Modified Conventional Teaching Strategy.

Step1 : The research assistant introduces the lesson.
Step 2 : The research assistant explains the theoretical bases of the topic.
Step 3: The research assistance give the students class work
Step 4: The research assistant marks students' work.
Step 5: The research assistant concludes the lesson with corrections to students' work.

3.8 Method of data analysis

The quantitative data collected was analyzed using descriptive statistics in the form of proportions, frequencies, means and standard deviations, independent t- tests and paired t-tests to compare differences between two groups, Analysis of Covariance (ANCOVA) and ANOVA for repeated measures. The Multiple Classification Analysis (MCA) aspect of ANCOVA was used to determine the magnitude of the performance of the various groups in Economics. For significant interaction effects, graphical illustrations were used to explain such effects. The results obtained in this study are as presented and discussed below. The sequence of the presentation and the discussion of the results are in accordance with the hypotheses formulated for the study.

3.9 Piloting of the instrument

The term ‘pilot studies’ refers to mini versions of a full-scale study (also called ‘feasibility studies’), as well as the specific pre-testing of a particular research instrument such as a questionnaire or interview schedule. Pilot studies are a crucial element of a good study design (Hundley & van Teijlingen,2002). The researcher went to a college far apart from the selected colleges for the study, to avoid contamination. She administered all the instruments to them. The results of the pilot study were used to review the items in the instruments. For example, the question “would you say reflective-reciprocal teaching strategy has changed your attitude towards Economics?” was re-structured into the three questions “I find learning Economics interesting, I enjoy solving economics problems and, Economics as a subject is very relevant to me” (see Section A; Appendix A1).

3.10 Ethicalconsiderations

The researcher applied for ethical clearance from the University of South Africa (UNISA) according to UNISA policy.After the approval, the researcher requested permission to conduct research from the ministry of education South West Nigeria. After that the researcher wrote to the Deans of the Faculties of Education of the selected Colleges of Education for permission. All the participants signed informed consent forms. In the letters, the researcher assured all the participants of confidentiality, anonymity, protection, voluntary participation and exit, before taking part in the study.

Informed consent

After the completion of the study, an electronic summary of the findings of the research will be made available to participants on request and copies will be available in the libraries and an electronic version will be available on the internet.

Protection from harm

There is no anticipated risk. No foreseeable risks are associated with the completion of the questionnaire and the achievement test, which is for research purposes.

Privacy, confidentiality and anonymity

The researcher let participants know that their names were not required and their anonymity was assured; however, indication of their age, gender, etcetera would be required to contribute to a more comprehensive analysis. All information obtained from this questionnaire and achievement test will be used for research purposes only and remain confidential. Their participation is voluntary and they have the right to omit any question if so desired, or to withdraw from participating without penalty at any stage.

3.11 Conclusion

In this chapter the researcher discussed the quantitative research methodology and quasi-experimental research design, questionnaires, numerical ability test and achievement test as research instrument, selection procedures, validity and reliability, data analysis and ethical consideration. The next chapter will be on the analysis and interpretation of results of the collected data.

CHAPTER 4 : PRESENTATION AND ANALYSIS OF RESULTS

4.1 Introduction

This chapter focuses on the presentation of the results gathered from the field work. The aim of the study was to measure the impact of RRT and CTI on second year Economics studentteachers' achievement and attitudes towardEconomics. The study had four objectives. Firstly to measure the impact of the reflective-reciprocal teaching strategy on student teachers' academic achievements, numerical ability and attitudes toward economics; secondly to determine if there a statistically significant difference in the academic achievement in Economics scores of second year economics student teachers taught using RRTcompared to those taught using CTI; thirdly to find out how RRT affects the attitude of student teachers expose to the RRT strategy as compares to the CTI strategy in Colleges of Education; and lastly to establish if mode of entry affects academic achievement and attitudes of economics student teachers at Colleges of Education.

The quantitative data collected was analyzed using descriptive statistics in the form of proportions, frequencies, means and standard deviations, independent t- tests and paired t-tests to compare differences between two groups, Analysis of Covariance (ANCOVA) and ANOVA for repeated measures. The Multiple Classification Analysis (MCA) aspect of ANCOVA was used to determine the magnitude of the performance of the various groups in Economics. For significant interaction effects, graphical illustrations were used to explain such effects. The results obtained in this study are as presented and discussed below. The sequence of the presentation and the discussion of the results are in accordance with the hypotheses formulated for the study, as outlined in Table 4.1.

Table 4.1: Hypotheses tested

Hypothesis 1		H_0:	There is no significant difference between the academic achievement and numeracy ability of second year Economics student teachers who participate in the reflective-reciprocal teaching program (RRT) and those who do not.
		H_1:	There is a significant difference between the academic achievement

			and numeracy ability of second year Economics student teachers who participate in the reflective-reciprocal teaching program (RRT) and those who do not.
Hypothesis 2		H_0:	There is no statistically significant difference in the academic achievement of second year Economics student teachers taught using reflective-reciprocal teaching (RRT) compared to those taught using conventional teaching instructions (CTI).
		H_1:	There is a statistically significant difference in the academic achievement of second year Economics student teachers taught using reflective-reciprocal teaching (RRT) compared to those taught using conventional teaching instructions (CTI).
Hypothesis 3		H_0:	There is no statistically significant differences using the reflective-reciprocal teaching strategy on the effect of attitude on student teachers' academic achievement.
		H_1:	There is a statistically significant differences using the reflective-reciprocal teaching strategy on the effect of attitude on student teachers' academic achievement
Hypothesis 4		H_0:	There is no statistically significant differences using the reflective-reciprocal teaching strategy on the effect of mode of entry on student teachers' attitude towards Economics
		H_1:	There is a statistically significant differences using the reflective-reciprocal teaching strategy on the effect of mode of entry on student teachers' attitude towards Economics

Presentation of the results will start with the sample characteristics in section 4.2, followed by the results of the Economics attitude questionnaire which includes the reliability of the instrument, descriptive statistics and validity of the instrument in section 4.3. Section 4.4 discusses the distribution of the continuous variables and the independent-tests and paired t-tests. The ANOVA models are discussed in section 4.5 and also present the repeated measurements ANOVA results. The chapter ends with the summary of findings and finally conclusion of the chapter in section 4.6.

4.2 Characteristics of the sample

A total of 178 students participated in the study. The demographics characteristics of the students are given in Table 4.2.

Table 4.2: Characteristics of the students

Variable	Category	Frequency	%
Gender	**Male**	**104**	**60.1%**
	Female	**69**	**39.9%**
	Total	**173**	**100.0%**
Group	**Control**	**85**	**47.8%**
	Experimental	**93**	**52.2%**
	Total	**178**	**100.0%**
Mode of entry	**Direct**	**88**	**49.4%**
	Prelim	**90**	**50.6%**
	Total	**178**	**100%**

A total of 173 students indicated their gender whilst 5 did not disclose. The ratio of males to females was almost 3:2 as evidenced by the male proportion of 60.1% (n = 104) as compared to the female composition of 39.9% (n = 69).There are more male studying Economics more than females at Colleges of Education. Gender does not affect academic performance of Economics studentteachers atColleges of Education.

The experimental group and control group were almost equal as evidenced by a control group of 47.7% (n = 85) and an experimental group of 52.2% (85). About 49.4% (n = 88) had a direct mode of entry whilst 60.6% (n = 90) had a preliminary mode of entry.

The average age was 21.76 years and the median was 22.00 years. The mean and the median are almost the same suggesting that the distribution might be symmetric. The summary statistics are shown in Table 4.3.The minimum and maximum ages were 17 and 29 years respectively giving a range of 12 years. The standard deviation was 2.3 indicating that 64% of the observations (within one standard deviation) are between 19.47 and 24.05 years. The coefficient of variation was 10.54% indicating that the observations do not have much variability since it is close to 0%. The box plot in Figure 4.3 shows that the maximum value 29 years is an

outlier. Removal of the outlier will make the distribution almost symmetrical. One can conclude that the majority of the students are aged between 19 to 24 years. Age does not affect academic achievement in economics.

Table 4.3: Summary statistics of age in years

Summary Statistics	Overall
Mean	21.76
Median	22.00
Standard deviation	2.293
Skewness	.215
Kurtosis	-.368
Maximum	29
Minimum	17
Range	12
Coefficientof variation	10.54%

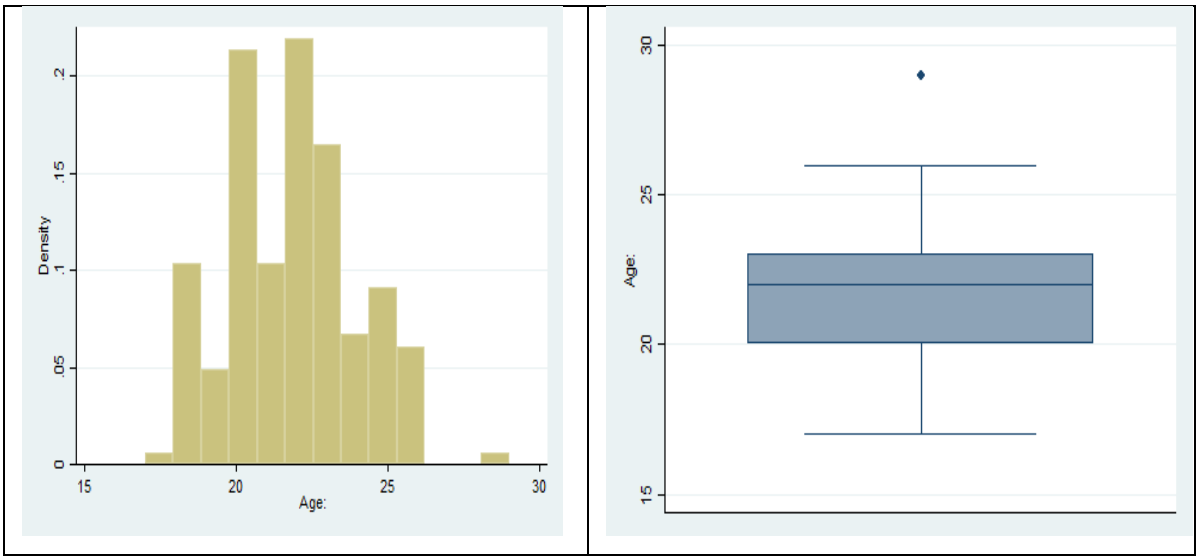

Figure 4.1: Histogram and box plot showing age of students

4.3 Data analysis of the economics instrument

The participants were asked 25 questions measuring their attitude on Economics.

Reliability of the questionnaire

The reliability of the instrument was found to be 0.857. According to Revelle and Zinbarg (2009) if a reliability test result is greater than 0.8 it is classified as good. A

high value of Cronbach signifies that the items are measuring the underlying (or latent) construct. Thus the instrument was reliable.

Descriptive analysis of the questionnaire

Student teacher's attitude.

The results were analysed in such a way that strongly agree was given a score of 4, agree 3, disagree 2 and strongly disagree 1. The aspects "*I feel nervous in Economics class*" and "*the subject Economics has little relation to what I experience in the real world*" were reverse scored since they were in the negative direction. The results of the descriptive statistics are presented in Table 4.4.

Table 4.4: Level of agreement on attitude statements on Economics

Attitude Statement	Level of agreement		Mean	Rank
	Agree	Disagree		
Q4. Economics is important to everyday life.	99.4% (167)	1 (0.6%)	3.66	1
Q1. I have good feelings towards economics.	98.3% (175)	1.7% (3)	3.54	2
Q10. Economics as a subject is very interesting and enjoyable.	97.8% (174)	2.2% (4)	3.53	3
Q3. I really like Economics.	93.7% (165)	6.3% (11)	3.5	4
Q18. Skill used to understand Economics can be helpful to me in my everyday life.	97.7% (173)	2.3% (4)	3.48	5
Q13. Economics as a subject is relevant to me.	94.5% (169)	4.5% (8)	3.45	6
Q16. I study Economics to learn knowledge that will be useful in life outside of school.	96.4% (171)	3.4% (6)	3.45	7
Q11. I am capable of enjoying this subject.	93.1% (162)	6.9% (12)	3.43	8
Q24. My lecturer tried hard to make the subject interesting.	94.4% (167)	5.6% (10)	3.4	9
Q23. My lecturer was good at explaining things.	92.7% (165)	7.3% (13)	3.39	10

Q2. Economics as a subject is not difficult.	92.7% (165)	7.3% (13)	3.3	11
Q15. I really enjoy the theoretical content of Economics.	91.5% (162)	8.5% (15)	3.29	12
Q20. Knowledge about Economics will help me get a suitable job in future.	87% (154)	13.0% (23)	3.28	13
Q9. I understand Economics formulas and can apply them.	90.8% (158)	9.2% (16)	3.27	14
Q5. It is easy to understand Economics concept and theory.	90.3% (159)	9.7% (17)	3.22	15
Q14. I enjoy solving Economics problems.	87.9% (153)	12.1% (21)	3.17	16
Q22. Better at solving Economics problems.	87% (154)	13% (23)	3.17	17
Q25. Am better at working collaboratively.	86.2% (150)	13.8% (24)	3.16	18
Q7. The graphs help me to understand real world issues better.	86.4% (152)	13.6% (24)	3.14	19
Q12. To understand Economics, I discuss with friends and other students.	74.3% (130)	25.7% (45)	3.05	20
Q21. I prefer different teaching strategy.	78% (138)	22% (39)	2.99	21
Q8. I feel nervous in Economics class (*R).	59.6% (102)	40.4% (69)	2.62	22
Q6. There are not many graphs to be learnt.	51.1% (89)	48.9% (85)	2.53	23
Q19. It is possible to explain Economics without mathematics formulas.	47.8% (85)	52.2% (93)	2.47	24
Q17. The subject Economics has little relation to what I experience in the real world (*R).	36.7% (65)	63.3% (112)	2.24	25

"Economics is important to every everyday life", "I have good feelings towards economics" and *"Economics as a subject is very interesting and enjoyable*" had means close to 4 indicating that the participants were in strong agreement.On the other hand, the aspects "*It is possible to explain Economics without mathematics formulas*" and "*the subject Economics has little relation to what I experience in the real world (*R)"* had lower levels of agreement below 50%and the means were close to two indicating that participants disagreed with the statements.

Exploratory factor analysis (EFA): Validity of the instrument

Exploratory factor analysis using the principal component method with a varimax rotation was used to measure the validity of the instrument. According to Tabachnick and Fidell (2014) factor analysis is applied where there is a theory about the underlying structure or when the researcher wants to understand the underlying structure. In this case the researcher believes that the attitude of students to Economics is driven by a few underlying structures called factors.

The appropriateness of the factor analysis was determined using the Bartlett Test of Sphericity and the Kaiser-Meyer Olkin (KMO) measure of sampling adequacy. The Bartlett Test of Sphericity measures whether there is sufficient correlation to proceed.An insignificant value of the Bartlett Test of Sphericity indicates lack of sufficient correlation and a KMO with a value of 0.50 and above is considered suitable for factor analysis (Tabachnick&Fidell, 2014; Hair, Babin, Black &Anderson, 2013). The latent root criterion was used to determine the number of factors to be retained by taking factors with Eigenvalues more than one. According to Hair *et al.* (2013), communalities should be above 0.5 or most of the variables should have communalities above 0.6. Furthermore, Pallant (2007) indicated that the factor solution is robust if the amount of variance explained is at least 50%.

A KMO of 0.828 was obtained and the Bartlett Test of Sphericity gave a p-value of 0.000 indicating that the solution was appropriate for factor analysis since KMO was above 0.5 and Bartlett's Test of Sphericity was significant. The aspects *"there are not many graphs to be learnt", "the graphs help me to understand real world issues better"* and *"I enjoy solving Economics problems*" had insignificant factor loadings which were less than 0.5 whilst the aspect "*Economics is important to everyday life*" and "*I feel nervous in Economics class (*R)*" were outliers where they were the only elements in a factor not correlated with another aspect and were thus removed from the analysis. The majority of the variables had communalities above 0.6. The factor solution resulted in five factors as shown in Table 6. The factors accounted for 57.48% thus were a robust solution. The factors were named: Economics as a

subject, importance of economics, lecturers attitude, teaching strategy and cooperative learning.

Table 4.5: Rotated factor solution of attitude attributes on Economics

Code	Factors and observedvariables	Loadings	Eigenvalues	% of variance
	Factor 1: Economics as a subject		4.091	20.46%
Q11	I am capable of enjoying this subject.	0.714		
Q3	I really like Economics.	0.706		
Q5	It is easy to understand Economics concept and theory.	0.671		
Q2	Economics as a subject is not difficult.	0.670		
Q10	Economics as a subject is very interesting and enjoyable.	0.668		
Q1	I have good feelings towards economics.	0.638		
Q9	I understand Economics formulas and can apply them.	0.630		
Q22	Better at solving Economics problems.	0.604		
Q15	I really enjoy the theoretical content of Economics.	0.534		
	Factor 2: Importance of economics		2.369	11.84%
Q13	Economics as a subject is relevant to me.	0.747		
Q16	I study Economics to learn knowledge that will be useful in life outside of school.	0.620		
Q18	Skill used to understand Economics can be helpful to me in my everyday life.	0.609		
Q20k	Knowledge about Economics will help me get a suitable job in future.	0.567		
	Factor 3: lecturers' attitude		1.756	8.78%
Q23	My lecturer was good at explaining things.	0.852		
Q24	My lecturer tried hard to make the subject interesting.	0.761		
	Factor 4: teaching strategy		1.733	8.67%
Q17	The subject Economics has little relation to what I experience in the real world (*R).	-.732		
Q19	It is possible to explain Economics without mathematics formulas.	0.661		
Q21f	I prefer different teaching strategy.	0.510		
	Factor 5: cooperative learning		1.548	7.74%
Q12	To understand Economics, I discuss with friends and other students.	0.789		
Q25	Am better at working collaboratively.	0.719		
	Total variance explained			**57.48%**

4.4 Economics attitude scale: independent t-tests and paired t-test

The independent t-tests were used to determine whether the Economics attitude score, pre-test achievement score, post-test achievement score and numeracy ability score differed by group and mode of entry. The paired t-test was then used to determine whether the pre-test achievement test and post-test achievement test differed by experimental group. All scores were expressed out of 100%. The Economics attitude score was obtained by summing the 25 variables since each variable could result in a maximum score of 4. The results are discussed in the following sections. The 5% level of significance was used. A p-value less than 0.05 would lead to the rejection of the null hypothesis of equal means. When it came to Economics attitude score both groups showed that they have a high attitude in Economics as evidenced by means of 76.59% and 81.10% for control and experimental groups respectively. The test was also highly significant with a p-value less than 0.001. The confidence interval error bar is shown in Figure 4.3. The experimental group had higher attitude score in Economics as compared to the control group although both groups seem to have a positive attitude as the means are above 50%.

The findings from this study revealed that student performance can be influenced by attitudes and attitudes can, in turn, influence student performance. When students take ownership of the classroom it's improves their performance. Students that have the right attitudes and perceptions toward Economics as a course are able to excel in the subject. Moreover, the findings also reveal that right attitude without suitable teaching strategy may not improve the students' academic achievement in economics.

Independent t-test to determine performance by group

An independent t-test was done to determine whether performance differed between experimental and control groups on the four tests.The results are shown in Table 4.6. No difference in the pretest scores will indicate that before the intervention, both groups were at the same performance level. The hypotheses to be tested are:

H_0: The means for the experimental group and control group are not the same

H_1: The means for the experimental group and control group are the same

Table 4.6: Independent t-tests to determine difference in means of the tests by group

Variable	Group	Mean	T-test	p-value	Decision
Pre-test achievement test	Control	19.824	-.390	.697	Null hypothesis is not rejected
	Experimental	20.591			
Post-test achievement test	Control	44.471	-12.458**	.000	*The null hypothesis is rejected*
	Experimental	83.118			
Numeracy ability test	Control	36.314	.590	.556	Null hypothesis is not rejected
	Experimental	34.767			
Economics attitude score	Control	76.588	-4.016**	.000	*The null hypothesis is rejected*
	Experimental	81.097			
p<0.05 and ** p<0.01					

There was no difference between the experimental and control group on the pre-test achievement tests and the numeracy ability tests. These tests were administered at the same time and hence both groups were equal in performance. It can be observed that the students performed dismally on the pre-test achievement test and numeracy ability test. The averages of the numeracy pre-test were below 37% for both groups whilst those of the achievement pre-test were below 21%. Economics as a subject was only theoretical before the introduction of a new Economics syllabus which incorporated some elements of Mathematics into the subject. The situation has been posing serious problems for students in Senior Secondary School classes partlyas a result of the carry over effects of the negative attitudes which they have towards Mathematics and ineffectiveness on the part of the teachers. Therefore, numeracy ability can affect the attitude and academic achievement of student teachers in economics

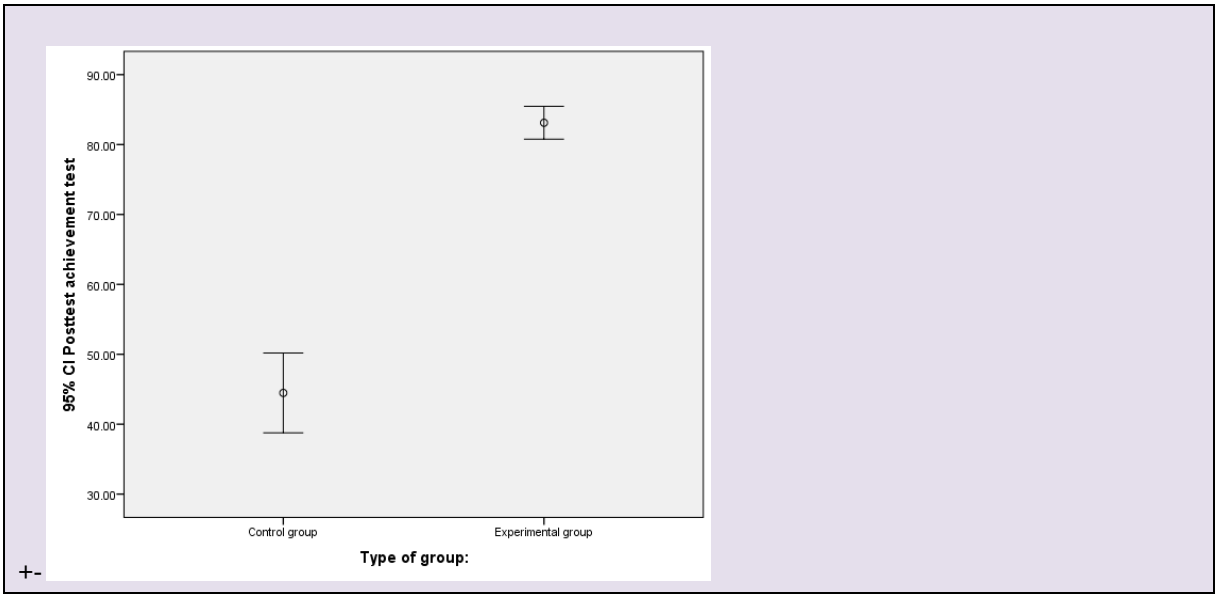

Figure 4.2: Confidence interval error bar showing differences in post-test achievement tests by group

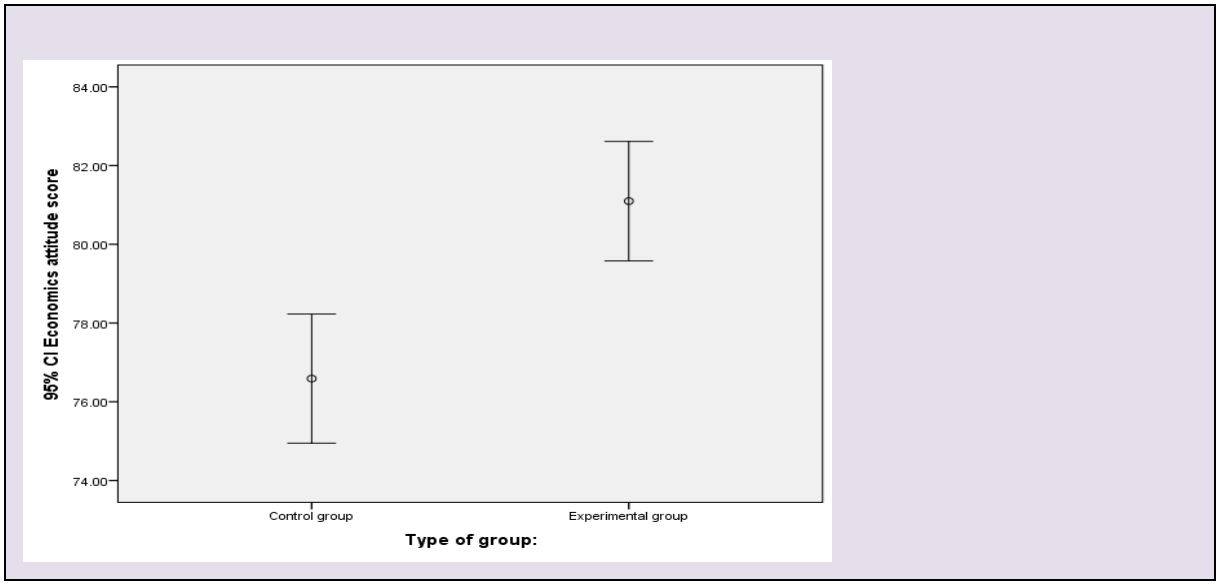

Figure 4.3: Confidence interval error bar showing differences in Economic attitude score by group

Table 4.7:Independent t-tests to determine difference in means of the tests by mode of entry

Variable	**Group**	**Mean**	**T-test**	**p-value**	**Decision**
Pre-test achievement test	Direct	18.182	-2.065*	.040	*The null hypothesis is rejected*
	Prelim	22.222			
Post-test achievement test	Direct	68.750	1.953	.052	Null hypothesis is not rejected
	Prelim	60.667			
Numeracy ability test	Direct	36.061	.419	.676	Null

	Prelim	34.963			hypothesis is not rejected
Economics attitude score	Direct	80.034	1.858	.065	Null hypothesis is not rejected
	Prelim	77.878			
p<0.05 and ** p<0.01					

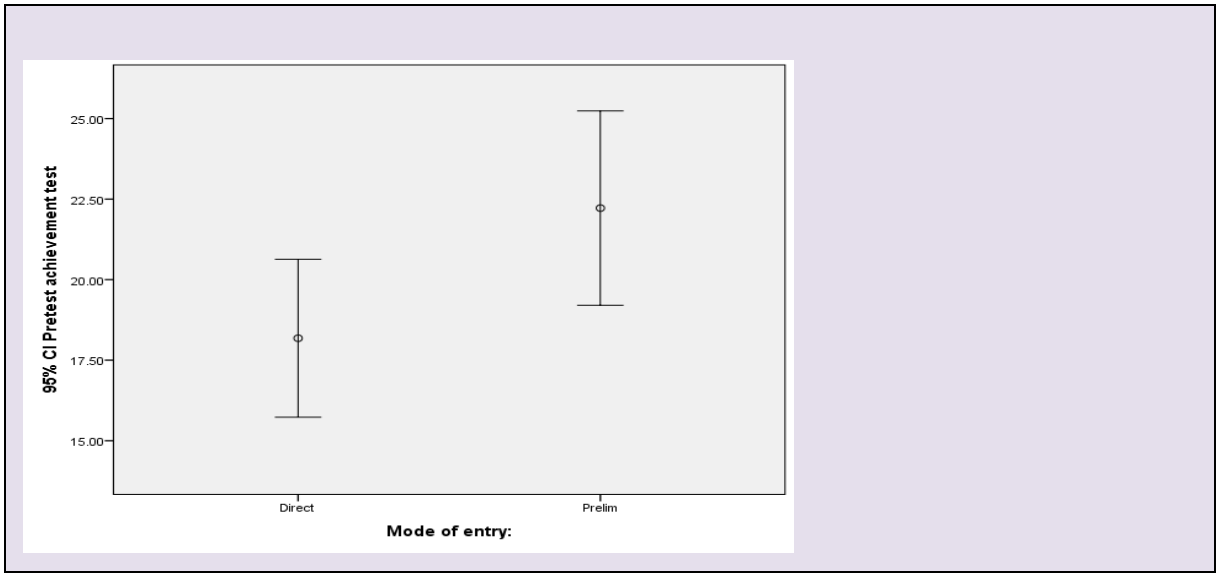

Figure 4.4: Confidence interval error bar showing differences in pre-test by mode of entry

Paired t-test to determine difference of pre-test and post-test achievement tests by group

Effect of reflective-reciprocal teaching strategy

Participants who wrote the pre-test were n=93 student teacher for the experimental group and n=85 student-teachers for the control group. The researcher administered the pre-test and the post-test in both groups to ensure similar conditions were maintained. Both the pre-test and the post-test were marked out of 20marks each and were written within one hour. After administering the pre-test, it took six weeks to administer the interventions after which the post-test was administered.

Firstly, the paired t-tests were done by first obtaining differences between pretests and post-tests. If the students performed the same in both tests, the differences should be close to zero. The researcher first did a one-sample t test of the difference which is equivalent to the paired t-tests. The test was done to determine whether the differences were close to an average of zero. The results are presented in Table 4.8.

The mean difference was 44.44% and the t-test gave a p-value of .00. Thus there was a difference between the pre-test and post-test outcomes.Further, the differences were used to determine whether they differed by group and the test is shown in Table 4.9. The mean differences for control are 24.647 whilst those for experimental are 62.527. This is also evident in the confidence interval error bar in Figure 4.5.There was no overlap between the two groups indicating the larger mean difference between pre-test and post-test was obtained from the experimental group.

Table 4.8: One sample t-test of the differences

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Post-test achievement test - Pre-test achievement test	178	44.4382	30.52218	2.28773

One-Sample Test

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Post-test achievement test - Pre-test achievement test	19.425	177	.000	44.43820	39.9235	48.9529

Table 4.9:T-tests to determine difference in means of the differences by group

Variable	**Group**	**Mean differences**	**T-test**	**p-value**	**Decision**
Post-test achievement test -Pre-test achievement test	Control	24.647	-10.322**	.000	*The null hypothesis is rejected*
	Experimental	62.527			

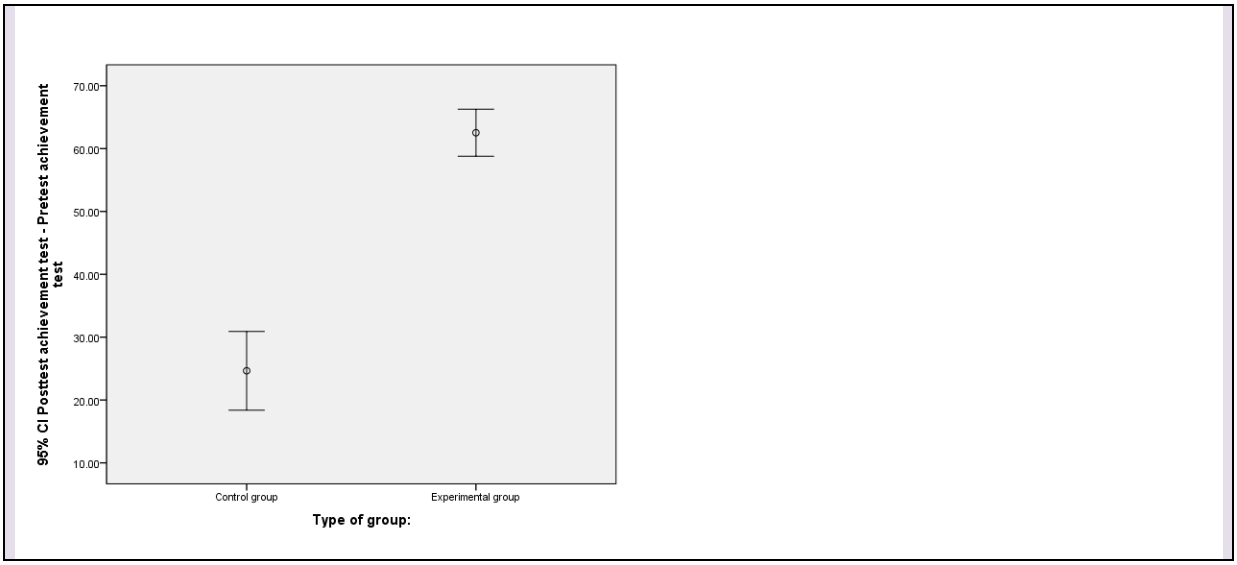

Figure 4.5: Confidence interval error bar showing mean differences by group

Paired t-test to determine difference of pre-test and post-test achievement tests by mode of entry

In terms of the mode of entry, direct had mean differences that were higher than those of prelim as shown in Table4.10. The average mean differences were 50.57 and 38.44 for direct and prelim respectively. The confidence interval error bar is shown in Figure 4.6. There was no overlap between the two groups indicating the larger mean difference between pre-test and post-test was obtained from the direct mode of entry.This could be due to load of work on direct entry compared to total units of courses offered by prelim students.

Table 4.10: T-tests to determine difference in means of the differences by group

Variable	Group	Mean differences	T-test	p-value	Decision
Post-test achievement test -Pre-test achievement test	Direct	50.568	2.696**	.008	*The null hypothesis is rejected*
	Prelim	38.444			

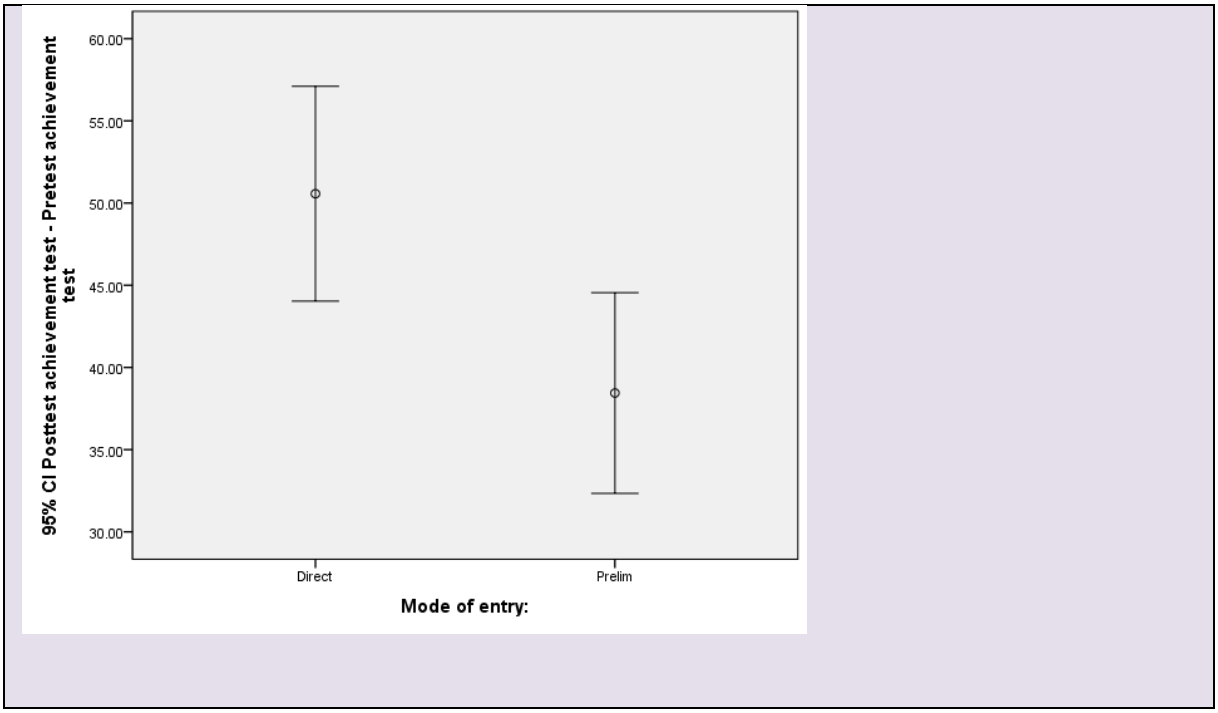

Figure 4.6: Confidence interval error bar showing mean differences by group

4.5 ANCOVA to analyze achievement test scores

Analysis of Covariance (ANCOVA) is a hybrid between analysis of variance and regression analysis. The analysis of covariance was used to eliminate the linear or higher degree relation between one or more independent variables (called covariates) and a dependent variable (post-test), with the main objective to be able to determine the effect of factor(s) (treatment e.g. group, mode of entry) on the dependent variable. It can be regarded as the simultaneous study of several regressions. The dependent variable was post-test whilst the covariate was the pre-test. In this case three ANOVAs were presented. The first had group as the fixed factor and the second had mode of entry as the fixed and the third had group, mode of entry and numeracy ability level as fixed factors. Numeracy ability level was categorised into three categories. The participants were categorised as those who scored 70% and above and were regarded as high ability; 50 – 69% as moderate ability and below 50% as low ability. The data resulted in only two groups since there was no one with a high ability in numeracy. There were 75.6% (n = 131) with a low ability and 26.4% (n = 47) with an average ability.

In order to perform an analysis of covariance, one has to test the assumptions first. As mentioned in Chapter 3 the ANCOVA has two assumptions, equal slopes and equal variances. If the slopes are not equal, then an ANCOVA cannot be performed. The assumptions was test in order to determine whether one couldproceed with the analysis.

ANCOVA results with group as fixed factor

In this case the independent was group, the dependent was post-test and the covariate was pre-test. The assumptions of equal slopes that are of homogeneity of regression should be first tested. The assumption was tested and the following result obtained. In this case the interaction was not significant as evidenced by a p-value of 0.863 which is greater than 0.05.Thus the differences in the post-test scores among the groups do not vary as a function of the pre-test. An ANCOVA was now performed and the test results obtained as shown Table 4.12.

Table 4.11: Testing assumptions of equal slopes of ANCOVA with group as independent variable

Tests of Between-Subjects Effects

Dependent Variable:Post-test achievement test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	66346.056[a]	3	22115.352	54.441	.000
Intercept	207906.198	1	207906.198	511.796	.000
Group	18278.203	1	18278.203	44.995	.000
Pre-test	.012	1	.012	.000	.996
Group * Pre-test	**12.212**	**1**	**12.212**	**.030**	**.863**
Error	70683.719	174	406.228		
Total	881300.000	178			
Corrected Total	137029.775	177			

a. R Squared = 0.484 (Adjusted R Squared = 0.475)

Table 4.12:Analysis of covariance to analyse achievement test scores with group as a fixed factor

Dependent	Post-test
Sample size	178

Levene's test for equality of error variances

F	DF 1	DF 2	P
84.617	1	176	.000

Tests of Between-Subjects Effects

Source	Sum of Squares	DF	Mean Square	F	P
Corrected model	66333.844[a]	2	33166.922	82.101	.000
Intercept	214793.302	1	214793.302	531.697	.000
pre-test	0.944	1	0.944	0.002	.962
group	66262.005	1	66262.005	164.024	.000
Residual	70695.931	175	403.977		
Total	881300.000	178			
Corrected Total	137029.775	177			

Coefficient of determination R^2	.484
R^2-adjusted	.478

Estimated Marginal Means

Group	n	Mean	Std. Error	95% Confidence interval
Control	85	44.473	2.181	40.169 to 48.776
experimental	93	83.116	2.085	79.002 to 87.230

Pairwise comparisons

Factors	Mean difference	Std. Error	P [a]	95% CI [a]
Control - experimental	-38.643	3.017	.000	-44.598 to -32.688
experimental - control	38.643	3.017	.000	32.688 to 44.598

[a]Bonferroni corrected

Summary statistics for dependent variable and covariate(s)

Variable	Mean	Standard deviation
Post-test	64.663	27.824
Pre-test	20.225	13.200

The Levene's test for equality error variances was not met as evidenced by a *p-value = 0.000 < 0.05*. Thus the assumption of equal variances was not met. However, ANCOVA is robust to violations of the assumption of homogeneity of variances provided the ratio of the largest group variance is not more than 3 times the smallest group. In this case the criteria is satisfied. Thus we can proceed with the interpretation of ANCOVA. The results of the F test support the effect of the RRT on the achievement of second year Economics student teachers as evidenced by an *F value = 164.024* with a *p-value = 0.000*. Thus the null hypothesis is rejected and one can conclude that RRT is more superior to the CTI. The post-hoc test was not used

since in this case there are only two groups. It can be noted that it gives similar results to the F-test since there are only two groups. One can confirm that there is a statistical difference between the achievement test results for students who were taught using the RRT method and those taught using the CTI methods. Therefore, learners taught using RRT performed better than those taught using CTI. The amount of variability in the post-test scores explained by the model is 47.8% (adjusted R^2).

In terms of the post-test, the t-value was -12.458 with a p-value of 0.000 leading to the rejection of the null hypothesis of equal means. The average for the control group was 44.47% whilst that of the experimental was 83.125 as shown in Figure 4.2. There was no overlap between the two groups indicating that they performed differently. The experimental group had an average indicating that the intervention worked very well.In another words, students who received RRT performed better than those who received CTI. The findings show that this strategy fosters positive independence by teaching students to work and learn together in a small group setting (Orliche*t al.*, 2010). Students relaxed because they were in charge; this affected their attitude towards Economics and increased their performance. Brewer and Jozefowicz (2006) are also in agreement with the results from this study. Therefore, RRT may be argued to be a possible solution to the poor performance of Economics student teachers(Foster& Rotoloni,2005);Allan, 2003);Slavin,1991;1994;1996; Griffin &Griffin, 1997).

ANCOVA results with mode of entry as fixed factor

Effect of Mode of Entry on student-teacher's achievement.

In this case the independent was mode of entry, the dependent was post-test and the covariate was pre-test. The assumptions of equal slopes were met as shown in Table 4.13. The F-value for the interaction was 1.725 with a p-value of 0.191. Since 0.191 was greater than 0.05, the assumption of equal slopes is met. Thus the differences in the post-test scores among the groups do not vary as a function of the pre-test. The results of the ANCOVA are shown in Table 4.14.

Table 4.13: Testing assumptions of equal slopes of ANCOVA with mode of entry as independent variable

Tests of Between-Subjects Effects

Dependent Variable:Post-test achievement test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4508.430[a]	3	1502.810	1.973	.120
Intercept	206442.933	1	206442.933	271.059	.000
Mode	3700.921	1	3700.921	4.859	.029
Pre-test	69.450	1	69.450	.091	.763
Mode * Pre-test	**1313.806**	**1**	**1313.806**	**1.725**	**.191**
Error	132521.345	174	761.617		
Total	881300.000	178			
Corrected Total	137029.775	177			

a. R Squared = .033 (Adjusted R Squared = .016)

Table 4.14: Analysis of covariance to analyse achievement test scores with mode of entry as a fixed factor

Dependent	Post-test
Sample size	178

Levene's test for equality of error variances

F	DF 1	DF 2	P
.368	1	176	.545

Tests of Between-Subjects Effects

Source	Sum of Squares	DF	Mean Square	F	P
Corrected model	3194.624[a]	2	1597.312	2.089	.127
Intercept	205293.658	1	205293.658	268.438	.000
pre-test	287.349	1	287.349	.376	.541
Mode	3122.785	1	3122.785	4.083	.045
Residual	133835.151	175	764.772		
Total	881300.000	178			
Corrected Total	137029.775	177			

Coefficient of determination R^2	.023
R^2-adjusted	.012

Estimated Marginal Means

Group	n	Mean	Std. Error	95% Confidence interval

Direct	88	68.950	2.966	63.096 to 74.803
Prelim	90	30.472	2.932	54.684 to 66.259

Pairwise comparisons

Factors			Mean difference	Std. Error	P [a]	95% CI [a]
Direct	-	Prelim	8.478	4.196	.045	.198 to 16.758
Prelim	-	Direct	-8.478	4.196	.045	-16.758 to -.198

[a]Bonferroni corrected

Summary statistics for dependent variable and covariate(s)

Variable	Mean	Standard deviation
Post-test	64.663	27.824
Pre-test	20.225	13.200

The Levene's test for equality error variances was met as evidenced by a *p-value = 0.545 > 0.05*. We can proceed with the interpretation of ANCOVA.

The results of the F test support the effect of RRT on the achievement of second year Economics student teachers as evidenced by an *F value = 4.083* with a *p-value = 0.045*. Thus the null hypothesis is rejected and one can conclude that the RRT is superior to CTI. The same conclusion was reached as above.

ANCOVA results with group, mode of entry and numeracy ability as fixed factors

In this case the independents were group, mode of entry and numeracy ability, the dependent was post-test and the covariate was pre-test. The assumptions of equal slopes were met as shown in Table 4.15. In this case the interaction was not significant as evidenced by a p-value of 0.485 which is greater than 0.05.Thus the differences in the post-test scores among the fixed factors do not vary as a function of the pre-test. An ANCOVA was now performed and the results obtained shown in Table 4.16.

Table 4.15: Testing assumptions of equal slopes of ANCOVA with group, mode of entry and numeracy ability as fixed factors

Tests of Between-Subjects Effects

Dependent Variable:Post-test achievement test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	73426.059[a]	15	4895.071	12.468	.000
Intercept	163212.023	1	163212.023	415.704	.000
Group	7350.171	1	7350.171	18.721	.000
Mode	160.439	1	160.439	.409	.524
Numeracy level	2401.277	1	2401.277	6.116	.014
Pre-test	455.839	1	455.839	1.161	.283
Group * Mode	519.198	1	519.198	1.322	.252
Group * Numeracy level	1053.152	1	1053.152	2.682	.103
Group * Pre-test	803.314	1	803.314	2.046	.155
Mode * Numeracy level	549.082	1	549.082	1.399	.239
Mode * Pre-test	66.903	1	66.903	.170	.680
Numeracy level * Pre-test	1577.746	1	1577.746	4.019	.047
Group * Mode * Numeracy level	**142.226**	**1**	**142.226**	**.362**	**.548**
Group * Mode * Pre-test	**240.571**	**1**	**240.571**	**.613**	**.435**
Group * Numeracy level * Pre-test	**932.810**	**1**	**932.810**	**2.376**	**.125**
Mode * Numeracy level * Pre-test	**646.864**	**1**	**646.864**	**1.648**	**.201**
Group * Mode * Numeracy level * Pre-test	**192.016**	**1**	**192.016**	**.489**	**.485**
Error	63603.717	162	392.616		
Total	881300.000	178			
Corrected Total	137029.775	177			

a. R Squared = .536 (Adjusted R Squared = .493)

Table 4.16: ANCOVA: Effects of treatment, mode of entry and numerical ability on students' achievement in economics

Source	Sum of Squares	DF	Mean Square	F	Sig.

Corrected Model	68672.643[a]	8	8584.080	21.223	.000
Pre-test	74.389	1	74.389	.184	.669
Main effect					
Group	50168.112	1	50168.112	124.031	.000
Mode of entry	911.173	1	911.173	2.253	.135
Numerical ability	545.096	1	545.096	1.348	.247
2-way Interactions					
Group x Mode of entry	297.253	1	297.253	.735	.393
Group x Numerical ability	.040	1	.040	.000	.992
Mode x Numerical ability	52.387	1	52.387	.130	.719
3-way Interactions					
Group x Mode x Numerical	14.414	1	14.414	.036	.850
Error	68357.132	169	404.480		
Total	881300.000	178			

*Significant at P<0.05

Independent test to determine performance by mode of entry

In order to determine how the tests differed by mode of entry which were direct and preliminary, the hypotheses tested were:

H_o: The means for the direct and prelim mode of entry are not the same

H_1: The means for the direct and prelim mode of entry are the same

Table 4.16 showsthe results of the test. There was no difference between the direct and prelim mode of entry in all tests except the pre-test. In terms of the pre-test achievement the means for direct mode of entry and prelim mode of entry were 18.18% and 22.22%. Thus the preliminary was significant higher than the direct as evidenced by the confidence interval error bars in Figure 6. There was not much overlap between the two groups indicating thatthey performed differently. The prelim had an average indicating that the group performed slightly higher than the direct. This means that mode of entry does not have an effect on student teachers' academic achievement.

The results in Table 4.16 show that:

There is a statistically significant main effect of group on student teachers' achievement inEconomics.

There is no statistically significant main effect of mode of entry on student teachers' achievement in Economics.

There is no statistically significant main effect of numerical ability on student teachers' achievement in Economics.

There is no statistically significant interaction effect of 'group' and 'mode of entry' on student teachers' achievement in Economics.

There is no statistical significant interaction effect of 'group' and 'numerical ability' on student teachers' achievement in Economics.

There is no statistically significant interaction effect of 'group', 'mode of entry' and 'numerical ability' on student teachers' achievement in Economics.

Summarily the results above show that the main effect of the group on the achievement of student teachers was significant at 5% significance level. Therefore, we reject the null hypothesis and agree with the alternative hypothesis, while for the remaining hypothesis on student teachers' achievement in economics we do not reject the null hypothesis.

4.6 Summary and conclusion of the chapter

The study was conducted to measure the impact of the RRT on student teachers' academic achievements and attitudes toward Economics. The study followed a quantitative research design method and used pre-test (achievement, attitude and numerical ability tests) and post-test (achievement and attitude tests) questionnaires to collect the data. Three research instruments were used for data collection. Four null hypotheses were tested in the study. Analysis of Covariance (ANCOVA) with descriptive analysis was used to process the data. From the results obtained, a significant difference was found to exist in the achievement of student teachers in Economics when taught using RRT compared to the CTI. The results also indicated that significant differences were found to exist in the numerical ability of student teachers on their learning outcomes. The results showed that the students with high numerical ability level performed better than students of medium ability followed by the low ability level. There is a significant interaction effect of mode of entry and

numerical ability on students' achievement in Economics. The summary results are in Tables 4.1, 4.2, 4.3, 4.4, 4.5 and 4.6 to 4.16 and also Figures 4.1, 4.2, 4.3, 4.4, 4.5 and 4.6 while the detailed analysed results are presented in Appendix C.

CHAPTER 5 : SUMMARY, DISCUSSION OF FINDINGS, LIMITATIONS, RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH

5.1 Introduction

In this chapter a review of the literature, the study results, and conclusions of the study are presented. The results of the study are discussed and interpreted in terms of the theoretical framework and the research questions. The chapter concludes with recommendations andsuggestions for further related research.

5.2 Summary of chapters

Chapter 1: The background to the study, statement of the problem, research questions, hypothesis and purpose of the study, the primary aim of the study, secondary objectives, scope of the study, and significance of the study.

Chapter 2: The theoretical framework which made use of the Social Constructive Theory, Social Cognitive Learning Theory and Reflective Theory.

Chapter 3: The research design, variables in the study, selection of participants, instrumentation, research processes as well as methods of data analysis.

Chapter 4: Results of all analysed data.

Chapter 5: Summary, discussion of findings and limitations, thereafter, some recommendations and areas for further research

5.3 Summary of main findings

The major issue addressed in this study was to measure the impact of RRT on student teachers' academic achievement and attitude towards Economics in three selected Colleges of Education. In addition, the study sought to find out any

interaction among the variables of treatment, numerical ability and mode of entry of student teachers.

Student teachers' poor performance in Economics has been an issue attracting the attention of researchers and educators in Economics (Walstad, 2001 and Becker 1994). The ineffectiveness is a result of low student teacher interaction. Students' failure to ask questions and the use of the lecture method were identified as the main cause of poor achievement in Economics (Adu and Ayeni, 2004). They demonstrated that achievement of candidates in Economics is not only poor generally, but continues to fall over the years based on an appraisal of trends in achievement of students in Economics. This is crucial for a subject as important as Economics; it is a lively subject dealing with solving current and future socioeconomic problems.

Being a lecturer at a college of education, the researcher can say that many student teacher education programmes present students with theoretical information and assume that this will sufficiently prepare them to obtain practical knowledge in their initial years of practice that will eventually lead to a state of expert professional knowledge. Our desired outcomes will not be achieved unless considerable changes are made to student teachers' education programmes such as incorporating RRT in the programme. Student teachers' poor performance in Economics has been an issue attracting the attention of researchers and educators in Economics (Walstad, 2001 and Becker ,1994). The major factor considered is the instructional strategy used in teaching the subject at the National College of Education (NCE) level which does not produce a good level of achievement for student teachers. This is more so as those strategies are not based on self-construction of knowledge, self-assessment and social interaction among learners. As a result of the nature of Dynamics which is a mathematically oriented concept Economics teachers' need to be reflective and explore cooperative teaching strategies for teaching the subject. The available confirmation from the last few years shows that passive learning based on traditional strategy of "chalk and talk" are the most broadly used teaching methods, characterizing the 20th century style of Economics teaching (Becker & Watts, 2001; Benzing& Christ, 1997: Siegfried*et al.*, 1996).

It has been projected that helping student teachers know and learn more meaningfully would enable these future teachers to encourage similar learning outcomes in the school children for whom they would have responsibility in due course (Brownlee,Purdie& Bouton-Lewis, 2001). These studies are in agreement with the findings from the current study that RRT is viable to improve performance and promote learning. Students who were instructed using cooperative learning achieved significantly higher scores on the achievement and knowledge retention post-tests than the students who were instructed using the conventional teaching method. This strategy should, therefore, be used for teaching Economics at the College of Education level (Agoro&Akinsola, 2013; Tran, 2014); a teacher needs to be reflective and explore cooperative strategies in teaching this subject.

Lysynchuck, Pressley and Vye (1990), Rosenshine, Meister and Chapman (1996), Taylor and Frye, (1992) andVan Den Bos, Brand-Gruwel and Aartnouse (1998) were not in agreement with my study; they concluded that reciprocal teaching requires a longer period of time and therefore was not enough time for students to transfer strategies learned. Taylor and Frye (1992) discovered that there were no differences between the experimental and control groups in their research. The current study concluded that RRT is effective in motivating student teachers' attitude and improving their academic performance in Economics compared to conventional teaching strategy.

In their study Allan (2003) and Greenway (2002) were in agreement with my study. They concluded that RRT was effective in motivating student teachers' attitude and achievement towards Economics. The current study concluded that RRT is more effective in motivating and improving Economics student teachers' attitude and achievement towards Economics.

5.4 Findings

Research Question 1

How will reflective-reciprocal teaching strategy impact on student teachers' academic achievement, and numeracy ability toward Economics at the College of Education?

It was found from the numeracy ability test that the students performed dismally on the pre-test achievement test and numeracy ability test. The averages of the numeracy test were below 37% for both groups whilst those of the pre-test were below 21%. Economics as a subject was only theoretical before the introduction of a new Economics syllabus which incorporated some elements of Mathematics into the subject. The situation has been posing serious problems for student teachers 'partly as a result of the carry over effects of the negative attitudes which they have towards Mathematics when they were in high school and ineffectiveness on the part of the teachers. Therefore, numeracy ability can affect the attitude and academic achievement of student teachers' in Economics. (*cf.* Sections 4.4.1 & 4.4 Tables4.6)

Research Question 2

Is there a statistically significant difference in the academic achievement of secondyear Economics student teachers' taught using reflective-reciprocal teaching (RRT) as compared to those taught using conventional teaching instructions (CTI)?

There was no difference between the experimental and control groups on the pre-test achievement tests. These tests were administered at the same time and hence both groups were equal in performance. It was found that the students performed dismally on the pre-test achievement test.

However, in terms of the post-test, the t-value was -12.458 with a p-value of 0.000 leading to the rejection of the null hypothesis of equal means. The average for the control group was 44.47% whilst that of the experimental group was 83.125% as shown in Figure 4.2. There was no overlap between the two groups indicating that

they performed differently. The experimental group had an average indicating that the intervention worked very well. (*cf.* Sections 4.1 and 4.4 and Table 4.6).

In other words, students who received RRT performed better than those who received CTI. The findings show that RRT fosters positive independence and group work by teaching students to work individually and as a small group. Students relaxed because they were in charge; this positively affected their attitude towards Economics and increased their performance. Brewer and Jozefowicz (2006) are also in agreement with the results from this study. Therefore, RRT may be argued to be a possible solution to the poor performance of Economics student teachers. (Foster & Rotoloni (2005); Allan (2003); Slavin (1991); Griffin and Griffin (1997).

The results showed that RRT was effective in facilitating student teachers' achievement in Economics, depicting the traditional (conventional) method as less effective in facilitating student teachers' achievement in Economics.Reflective-reciprocal teaching is a student-centered instructional strategy where the students and teachers switch roles in a lesson. Students took ownership of their role in reciprocal teaching and they feel comfortable expressing their ideas and opinions in open dialogue. Reflective-reciprocal teaching strategies provided a shared learning experience which led to a higher quality of learning; it is also an effective technique for increasing students' academic achievement.(*cf.* Sections 4.4.3 & 4.4, Table 4.8 & 4.9, Fig. 4.5).

Research Question 3

How does RRT affect the attitude of student teachers' exposed to the RRT strategy as compared to the CTI strategy in Colleges of Education?

With respect to Economics attitude score, both groups showed that they have a high attitude in Economics as evidenced by means of 76.59% and 81.10% for control and experimental group respectively. The test was also highly significant with a p-value less than 0.001. The confidence interval error bar is shown in Figure 4.2. The experimental group had a higher attitude score in Economics as compared to the control group although both groups seem to have a positive attitude as the means

are above 50%. Students may have positive attitudes towards a subject but without an appropriate teaching strategy, academic achievement may not be attainable. (*cf.* Sections 4.3 & 4.4 Figure4.2).

Student teachers in the control group felt that CTI was not appropriate, it does not facilitate learning, they would rather prefer group work, whereby outstanding learners can assist the slow learners. The findings from this study revealed that students' performance can be influenced by attitudes and attitudes can, in turn, influence student performance when students take ownership of the classroom. Students that have the right attitudes and perceptions toward Economics as a course are able to excel in the subject. This would further help them to gain knowledge of economics in a more enjoyable manner and ultimately ease the learning process, therefore students' attitudes in Economics as a course can be influenced by the type of help provided by a reflective instructor as supported by the work of Brewer and Jozefowicz (2006). On the other hand, learners in the control group felt that their participation during lessons was limited and they wished it could be improved through peer teaching, group discussions, and using different teaching methods. RRT proved to be effective in motivating student teachers to have the right attitude towards Economics (*cf.* Sections 4.5 & 4.6).

Similar results were obtained by Kettmann, Klingner and Sharon Vaughn (1996). Therefore, the teaching method used by a teacher is one of the determinants for students' negative or positive attitudes towards the course (Palinscar& Brown, 1984).

Research Question 4

*Does mode of entry affect academic achievement and attitude of Economics student teachers at Colleges of Education**?***

In order to determine how the tests differed by mode of entry which were direct and preliminary, the hypotheses tested were:

H_o: The means for the direct and prelim mode of entry are not the same

H_1: The means for the direct and prelim mode of entry are the same

Table 4.7 gives the results of the test. There was no difference between the direct and prelim mode of entry in all tests except the pre-test. In terms ofthe pre-test achievement the mean for direct mode of entry and prelim mode of entry were 18.18% and 22.22%. Thus the preliminary was significantly higher than the direct as evidenced by the confidence interval error bars in Figure 4.4. There was not much overlap between the two groups indicating that they performed differently. The prelim modeof entry had an average indicating that the group performed slightly higher than the direct mode of entry. According to Table 4.8, mode of entry does not affect student teachers' academicperformance (*cf.* Sections4.4.2, Fig.4.4 &Table 4.7).

5.5 Conclusion

The aim of the current study was to investigate RRT and CTI on the attitude and achievement of student teachers'. The results of this investigation indicated that the use of RRT positively influenced the attitude and improved student teachers' performance. This teaching strategy is student centered. Students were in charge and the interaction and learning went together. Therefore, RRT strategies are effective in improving the achievement in and attitude of student teachers towards Economics compared to CTI strategies. Also the results revealed the significance of using this strategy on the numeracy ability of student teachers as per their learning outcomes. The results showed that the students with high numerical ability level performed better. There is no significant interaction on the effect of mode of entry and numerical ability on students' achievement in Economics, meaning that the students' mode of entry does not affect their academic achievement.

5.6 Recommendations

In view of the implications of the findings from the study, the following recommendations are made:

- It is recommended that the Federal and States' Ministries of Education should inform all the lecturers in the Colleges of Education about RRT. This could be achieved through workshops on the use of RRT.

- Lectures at Colleges of Education should reconstruct their lesson plan to accommodate RRT.

- Numeracy ability should be prioritized, and the curriculum planner should focus more on mathematics aspect of Economics.

- Student teachers should be training with RRT in order to perform better academically.

- Student teachers should be training with RRT so as to make effective use of RRT in the classroom in order to further enhance the achievement of their future students in the subject.

- When reviewing the book for college student teachers, RRT teaching strategy should be included.

5.7 Limitations of the study

There are some factors which limited the generalization of the result of this study. These include:

- The present study was conducted in three Colleges of Education out of many of such in the country;
- The study was conducted only in public Colleges as there now many private Colleges of Education;
- Time limit was another constraint since the number of periods for some other subjects must not be disrupted

5.8 Further studies

The following recommendations are made for further studies that a larger sample size of the same population included on the effect of RRT in teaching Economics students at Colleges of Education should be investigated so that the results can be generalised to all Colleges of Education in Nigeria. Furthermore, exploring RRT in

teaching Economics a Colleges of Education in Nigeria using a case study design. Lastly, using a mixed method design to investigate the effect of RRTcompared to CTI in teaching Economics at Colleges of Education in Nigeria.

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LIST OF APPENDIXES

A1: Economics attitude questionnaire (EAQ)

A2: Instrument; Achievement test

A3: Instrument; Numerical ability test

B1: Informed consent letter for the Lecturers

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B3:Consent letter for the student-teachers

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APPENDIX A1: Economics Attitude Questionnaire

DearRespondent,

This questionnaire forms part of my master's degree (M Ed.) programme at the University of South Africa. You have been selected from the population. Hence, I invite you to take part in this survey.

The aim of this study is to measure the impact of reflective-reciprocal teaching strategy on student teachers' academic achievement and attitude towards Economics. The findings of the study will be of great value to the Colleges of Education in Nigeria.

You are kindly requested to complete this survey questionnaire, comprising of two sections honestly and frankly as possible and according to your personal views and experience. No foreseeable risks are associated with the completion of the questionnaire which is for research purposes only. The questionnaire will take approximately 20 minutes to complete.

You are not required to indicate your name and your anonymity will be ensured; however, an indication of your age, gender, mode of entry etcetera will contribute to a more comprehensive analysis. All information obtained from this questionnaire will be used for research purposes only and will remain confidential. Your participation in this survey is voluntary and you have the right to omit any question, if so desired, or to withdraw from answering this survey without penalty at any stage. After the completion of the study, an electronic summary of the findings of the research will be made available to you on request.

Permission to undertake this survey has been granted by the South West College of Education's Dean and the Ethics Committee of the College of Education, UNISA. If you have any research-related enquiries, they can be addressed directly to me or my supervisor. My contact details are: +27780745065, email: gbemisolaojo@gmail.comand my supervisor can be reached at +277124296201,

Department of curriculum and instructional studies, College of Education, UNISA, e-mail: vwkmm@unisa.ac.za.

By completing the questionnaire, you imply that you have agreed to participate in this research. Please return the completed questionnaire to me.

GENDER:

AGE:

NAME OF SCHOOL:

MODE OF ENTRY:

NO. OF YEAR IN THE INSTITUTION:

ECONOMICS Attitude Questionnaire (EAQ)

SECTION B: SA- Strongly agree, A-Agree, D-Disagree, SD- Strongly Disagree.

S/N		SA	A	D	SD
1	Economics isadifficultsubject				
2	I feel nervous in Economics class				
3	I really like to study Economics				
4	Economics is important to everyday life				
5	It is easy to understand Economics concept and theory				
6	I understand Economics formulas and can apply them				
7	Economics as a subject is very interesting and enjoyable				
8	Economics as a subject is relevant to me				
9	I enjoy solving Economics problems				
10	I really enjoy the theoretical content of economics				
11	The subject Economics has little relation to what I experience in thereal world				
12	It is possible to explain Economics without mathematicsformulas				

13	During Economics concept we are able to learn collaboratively
14	Knowledge about Economics will help me get a suitable job in the future
15	Am better at solving Economics problems
16	My lecturer was good at explaining various Economics concepts

APPENDIX A2: Student Teachers' Achievement Test in Economics

SECTION A: Demographic Data

Name:

College:

Gender:

Mode of entry to college:

SECTION B: Multiple choice questions

1.1 What is the basic economics problem of the society?

A. What to transport
B. What to produce
C. What to purchase

1.2 Why do we study economics?

A. To manage learners
B. To allocate sources
C. To control government

1.3 Explain the term balance of payment surplus

A. When the total received is equal to total payment to other countries
B. When the total received from other countries exceed the total payment to other counties
C. When the total payment to other country exceed the total received from other country.

1.4 One of the problems of distribution of commodities in West Africa is?

A. Inadequate storage
B. National supply
C. Paper supply

1.5 Differentiate between opportunity cost and money cost

A. Opportunity cost is the goods you forgo while money cost is the total money you spent

B. Money cost is the goods you forgo while opportunity cost is the total money you spent

C. Opportunity cost isand money arethe same.

1.6 One of the factors that determines the efficient use of resources is

A. Quality of labour
B. Production processes
C. Capital goods

1.7What is the difference between public enterprise and private enterprise?

A. One is owned by the government and the other one is owned by an individual
B. Both are owned by an individual
C. Both are owned by the government

1.8 What affects indigenous firms in West Africa?

A. Capital
B. Labour
C. Opportunity

1.9 Factors affecting demand for labour includes?

A. Skill and price
B. Structure and dependency
C. Attraction

1.10 One of the following is not a type of economic system

A. Systematic
B. Capitalism
C. Socialism

APPENDIX A3: The raw scores of 20 students of Bodija High School

The raw scores of 20 students of Bodija High School who took part in an examination in economics are given below:

38, 39, 12, 20, 18, 28, 20, 46, 34, 20, 70, 64, 52, 48, 64, 43, 66, 53, 69, 34

- What is the mean score of the student's marks?
- What percentage passed the examination?
- What percentage of the students failed the examination?
- What is the range of the scores?
- How many students scored below the mean score?

1. **Distribution of workers at Tanko Ventures Limited is as follows:**
   Cleaners: 60
   Messengers: 15
   Drivers: 25
   Typists: 20
   Clerks: 30

Represent the above information using:

- Pie chart,
- Histogram and
- Bar chart

2. The table below shows the age distribution of a hypothetical population

- Present this information in the form of a pie chart.

AGE	**NO OF PEOPLE IN (MILLION)**
Under 20	**20.90**
20-29	**13.75**
35-59	**12.10**
60and above	**8.25**

3. Use the data in the table below to answer the questions that follow

Age group	1955	1950
0-16	150	143
17-45	51	107
46-60	29	33
Above 60	15	17

- What is the percentage increase in the working population between 1955 and 1960?
- Calculate the ratio of dependent population to the working population in 1955
- Calculate the ratio of dependent population to the working population in 1960
- Has the dependency ratio increased or decreased between 1955 and 1960?

4. A demand curve slopes downward from left to right, but this may not always be so.

Explain this statement.

5. **The daily sales of a department store for one week are as follows. Calculate the average daily sales for the week using the table below**

Days.	Mon.	Tue.	Wes.	Thur.	Fri.	Sat.
Sale	1,750	1000	3500	2250	1000	2500

6. **Study the following extract on country Y's population data and answer the questions that follows:The population of country Y in 1970 was 60 million. From 1971 to 1975, the total number of births was 25 million and deaths stood at 3 million. 8million immigrants and 4 million emigrants were recorded in the reporting period.**
   - Present the above data in a table
   - Determine the net migration within the period
   - Calculate the population of the country in 1975
   - What is the percentage increase in the population of the country from 1970 to 1975?

7. **Discuss the factors that should motivate a producer to supply more of a commodity**

APPENDIX B1: A consent letter to Economics student-teachers' Lecturer

Research topic:MEASURING THE IMPACT OF REFLECTIVE–RECIPROCAL TEACHING STRATEGY ON STUDENT-TEACHERS' ACADEMIC ACHIEVEMENT AND ATTITUDE TOWARDS ECONOMICS

Researcher: Mrs. GbemisolaOjo

Supervisor: Prof. M Van Wyk

Dear Economics Lecturer,

My name is GbemisolaMotunrayoOjo and I am registered with the University of South-Africa (UNISA) for a degree of Master in Education (MEd), with a specialization in curriculum and instructional studies, my supervisor is Prof. Micheal Van Wyk.Tocomplete the MEd I am required to conduct a school-based research. The topic of my research is measuring the impact of reflective-reciprocal teaching strategy on student-teacher academics attitude and achievement towards Economics.

The main purpose of this study is to establish a teaching method that is suitable to improve students understanding and to improve their performance in Economics. In order to do this, I wish to conduct a six-week lesson using two different teaching methods, one of which could be offered by you. The two colleges will be divided into experimental and control groups. I will teach my proposed new instruction in the experimental group, and you could use your own traditional (usual) method in the control group. The aim is to compare the two teaching methods to determine the one which is more effective in teaching Economics student- teacher. I therefore request you to be part of this research.

In case you agree to participate, you will be expected to administer a performance test to your second year economics students, at the beginning and at end of the research. The same test will be administered by me in the experimental group at both intervals. We will teach the same content but use different methods to present it. The test scores will be used to measure the influence of each teaching method on the performance of

students. Your name and those of your students will not be revealed.You will be allowed to change your mind at any time, and to withdraw during the course of research if you feel so. There are no known risks to you and to your students for assisting me in this research.

In addition, each student will receive a consent letter from me to explain their involvement in my research. They will also be allowed to choose if they want to participate in the research or not.If you need more information please contact me by phone **at +2773 4700 729 or by e-mail at gbemisolaojo@gmail.com.** Please contact me at your earliest convenience to discuss the work or to provide your consent to participate.

Thank you for your consideration.

Yours sincerely,

Signature: _____

GbemisolaOjo

APPENDIX B2: An informed consent form for Economics student-teachers' Lecturer

Dear Mrs. Ojo,

I, _____,
the second year economics student teachers' lecturer_____ college of education, acknowledge that I have received, read and understood the content of the request letter that you sent me whichexplain your intentions to conduct research in my classroom. The title of your research is: *The impact of Reflective-Reciprocal teaching strategy on student-teachers' academic achievement and attitude towards Economic*s and the purpose of the research is explained in the letter.

I therefore **give consent/ do not give consent** to participate in your research.

Teacher signature: _____
Date: _____

Researcher signature: _____
Date: _____

APPENDIX B3:AConsent letter to second year Economics student-teachers

Research topic: The impact of reflect- reciprocal teaching strategy on student - teacher's academics attitude and achievement towards economics

Researcher: Mrs. GbemisolaOjo

Supervisor: Prof. M Van Wyk

Dear Student-teacher,

I am doing a research study in order to establish a teaching method that is suitable to improve your attitude and achievement in Economics. The title of my study is reflective-reciprocal teaching strategy on student-teachers' academics attitude and achievement towards Economics. The aim of this study is to equip you with the knowledge of the role of socialization in teaching, and will become aware of reflective -reciprocal teaching that you can use when you are practicing. In order to do this I wish to conduct research with second year Economics student-teacher and because you are one of them am requestingyou toparticipate in my research.

Although I will encourage you to be part of this research, but the participation is voluntary. This means your decision to exclude yourself from this research will not harm or disadvantage your academic progress, as well as your relationship with me. Also, your decision to participate in this research does not entitle you to receive any special benefit or gift from me. Therefore it means you can be a member of the class but not be part of the research. So, it is up to you. If you say okay now, but you want to stop later, that is fine and acceptable too. If you choose to participate in this research you will be expected to do the following research activities: (1) write a pre-study achievement test in Economics to help the researcher to measure the effect of traditional method of teaching on you.You may also be requested to: (2) complete a questionnaire on your attitude towards Economics. At the end of my teaching you will also be requested to write another test (a post-test) to help me see the influence of my teaching on your performance.

There is no risk in deciding to be part of this research. When I complete the research I will write a report about what I found out. Your name will not be used in the report

and I promise to share the report of my findings with you. After that discussion I will request you to complete the reply slip that I have included in this letter. Your reply will indicate to me whether you want to be in this research or not.

If you need more information please contact me by phone at +27734700729 or by e-mail at gbemisolaojo@gmail.com. Please contact me at your earliest convenience to discuss the work or to provide your consent to participate.

Yours sincerely,

Signature: _____

Mrs. Ojo

APPENDIX B4:Consent form for the student-teachers

APPENDIX C: Results of analysis

Table 1: ANOVA showing the significant interaction effects of Treatment, Mode of entry and Numerical ability on Students' Achievement in Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	944.956	12	78.746	64.734	.000	.910
Pre Achievement	.921	1	.921	.757	.387	.010
Main effect						
Treatment	128.088	2	64.044	52.648	.000	.578
Mode of entry	1.144E-02	1	1.144E-02	.009	.923	.000
Numerical ability	.788	1	.788	.648	.423	.008
2-way Interactions						
Treatment x Mode of entry	2.471	2	1.236	1.016	.367	.026
Treatment x Numerical ability	9.748	2	4.874	4.007	.022	.094
Mode x Numerical ability	.274	1	.274	.225	.636	.003
3-way Interactions						
Treatment x Mode x Numerical	.193	2	9.671E-02	.079	.924	.002
Error	93.667	77	1.216			
Total	1038.622	89				

(R-squared = 0.910, Adjusted R-Squared = 0.896)

Table 2: Estimated Marginal means of the Treatment, Mode of entry and Numerical ability on Students Achievement in Economics

Treatment groups	Mode of entry	Numerical ability	Mean	Std. Error
Federal college of Education, Oyo	UTME	Poor	18.266	.366
		Good	18.039	.418
	NCE	Poor	18.211	.681
		Good	17.267	1.145
Federal college of Education, Abeokuta	UTME	Poor	15.195	.398
		Good	16.715	.373
	NCE	Poor	15.092	.383
		Good	16.469	.656
Emmanuel Alayande College of education	UTME	Poor	9.872	.621
		Good	9.852	.433
	NCE	Poor	10.594	.909
		Good	10.498	.623

Table 3: ANOVA showing the significant main effects of Treatment on Students' Achievement in Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	924.590	3	308.197	232.433	.000	.890
Pre Achievement	.434	1	.434	.327	.569	.004
Treatment	185.635	2	92.817	70.000	.000	.619
Error	114.032	86	1.326			
Total	1038.622	89				

(R-squared = 0.890, Adjusted R-Squared = 0.886)

Table 4: Table showing the Descriptive statistics of the Treatment group on Students' Achievement in Economics

Treatment groups	Mean	Std. Deviation	N
Federal College of Education, Oyo	17.93	0.98	30
Federal College of Education, Abeokuta	15.70	1.51	30
Emmanuel Alayande College of Education, Oyo	10.30	0.84	30
Total	14.64	3.42	90

Table 5: Scheffe Post-Hoc Multiple Comparison of the Treatment group on Students' Achievement in Economics

• Treatment groups	(J) Treatment groups	Mean difference	Std. Error	Sig.
Federal College of Education Oyo	Federal College of Education, Abeokuta	2.23*	.30	.000
	Emmanuel Alayande College of Education, Oyo	7.63*	.30	.000
Federal College of Education, Abeokuta	Federal College of Education Oyo	-2.23*	.30	.000
	Emmanuel Alayande College of Education, Oyo	5.40*	.30	.000
Emmanuel Alayande College of Education, Oyo	Federal College of Education Oyo	-7.63*	.30	.000
	Federal College of Education, Abeokuta	-5.40*	.30	.000

Table 6: ANOVA showing the significant main effects of Mode of entry on Students' Achievement in Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	741.013	2	370.507	108.310	.000	.713
Pre Achievement	740.728	1	740.728	216.537	.000	.713
Mode of entry	2.058	1	2.058	.602	.440	.007
Error	297.609	87	3.421			
Total	1038.622	89				

Table 7: Table showing the Descriptive statistics of Mode of entry on Students' Achievement in Economics

Mode of entry	Mean	Std. Deviation	N
UTME	14.68	3.62	68
NCE	14.55	2.76	22
Total	14.64	3.42	90

Table 8: ANOVA showing the significant main effects of Numerical ability on Students' Achievement in Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	742.863	2	371.431	109.260	.000	.715
Pre Achievement	675.193	1	675.193	198.614	.000	.695
Numerical ability	3.908	1	3.908	1.149	.287	.013
Error	295.759	87	3.400			
Total	1038.622	89				

(R-squared = 0.715, Adjusted R-Squared = 0.709)

Table 9: Table showing the Descriptive statistics of Numerical ability on Students' Achievement in Economics

Numerical ability	Mean	Std. Deviation	N
Poor	15.57	2.91	42
Good	13.83	3.65	48
Total	14.64	3.42	90

Table 10: ANOVA showing the significant interaction effects of Treatment and Mode of entry on Students' Achievement in Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size

Corrected Model	929.537	6	154.923	117.876	.000	.895
Pre Achievement	.404	1	.404	.307	.581	.004
Main effect						
Treatment	146.781	2	73.391	55.841	.000	.574
Mode of entry	2.906E-02	1	2.906E-02	.022	.882	.000
2-way Interactions						
Treatment x Mode of entry	4.729	2	2.364	1.799	.172	.042
Error	109.085	83	1.314			
Total	1038.622	89				

(R-squared = 0.895, Adjusted R-Squared = 0.887)

Table 11: Table showing the Descriptive statistics of Treatment group and Mode of entry on Students' Achievement in Economics

Treatment groups	Mode of entry	Mean	Std. Deviation	N
Federal college of Education, Oyo	UTME	17.96	1.00	26
	NCE	17.75	0.96	4
	Total	17.93	0.98	30
Federal college of Education, Abeokuta	UTME	15.94	1.51	18
	NCE	15.33	1.50	12
	Total	15.70	1.51	30
Emmanuel Alayande College of education	UTME	10.17	0.87	24
	NCE	10.83	0.41	6
	Total	10.30	0.84	30
Total	UTME	14.68	3.62	68
	NCE	14.55	2.76	22
	Total	14.64	3.42	90

Table 12: ANOVA showing the significant interaction effects of Treatment and Numerical ability on Students' Achievement in Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	942.094	6	157.016	135.011	.000	.907
Pre Achievement	.987	1	.987	.849	.359	.010
Main effect						
Treatment	170.724	2	85.362	73.399	.000	.639
Numerical ability	2.660	1	2.660	2.287	.134	.027
2-way Interactions						
Treatment x Numerical ability	13.956	2	6.978	6.000	.004	.126
Error	96.528	83	1.163			
Total	1038.622	89				

(R-squared = 0.907, Adjusted R-Squared = 0.900)

Table 13: Table showing the Descriptive statistics of Treatment group and Numerical ability on Students' Achievement in Economics

Treatment groups	Numerical ability	Mean	Std. Deviation	N
Federal college of Education, Oyo	Poor	18.06	0.94	18
	Good	17.75	1.06	12
	Total	17.93	0.98	30
Federal college of Education, Abeokuta	Poor	15.06	1.25	17
	Good	16.54	1.45	13
	Total	15.70	1.51	30
Emmanuel Alayande College of education	Poor	10.43	0.98	7
	Good	10.26	0.81	23
	Total	10.30	0.84	30
Total	Poor	15.57	2.91	42
	Good	13.83	3.65	48
	Total	14.64	3.42	90

Table 14: ANOVA showing the significant interaction effects of Mode of entry and Numerical ability on Students' Achievement in Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	746.302	4	186.576	54.252	.000	.719
Pre Achievement	672.966	1	672.966	195.683	.000	.697
Main effect						
Mode of entry	3.210	1	3.210	.933	.337	.011
Numerical ability	3.530	1	3.530	1.027	.314	.012
2-way Interactions						
Mode x Numerical ability	3.034E-02	1	3.034E-02	.009	.925	.000
Error	292.320	85	3.439			
Total	1038.622	89				

(R-squared = 0.719, Adjusted R-Squared = 0.705)

Table 15: Table showing the Descriptive statistics of Mode of entry and Numerical ability on Students' Achievement in Economics

Mode of entry	Numerical ability	Mean	Std. Deviation	N
UTME	Poor	15.82	3.10	28
	Good	13.88	3.78	40
	Total	14.68	3.62	68
NCE	Poor	15.07	2.50	14
	Good	13.63	3.11	8
	Total	14.55	2.76	22
Total	Poor	15.57	2.91	42
	Good	13.83	3.65	48
	Total	14.64	3.42	90

Table 16: ANOVA showing the significant interaction effects of Treatment, Mode of entry and Numerical ability on Students' Attitude to Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	2546.510	12	212.209	4.009	.000	.385
Pre Attitude	1.730	1	1.730	.033	.857	.000
Main effect						
Treatment	1495.276	2	747.638	14.124	.000	.268
Mode of entry	74.243	1	74.243	1.403	.240	.018
Numerical ability	91.553	1	91.553	1.730	.192	.022
2-way Interactions						
Treatment x Mode of entry	71.453	2	35.727	.675	.512	.017
Treatment x Numerical ability	326.230	2	163.115	3.082	.052	.074
Mode x Numerical ability	119.948	1	119.948	2.266	.136	.029
3-way Interactions						
Treatment x Mode x Numerical	173.918	2	86.959	1.643	.200	.041
Error	4075.890	77	52.934			
Total	6622.400	89				

(R-squared = 0.385, Adjusted R-Squared = 0.289)

Table 17: Estimated Marginal means of the Treatment, Mode of entry and Numerical ability on Students Attitude to Economics

Treatment groups	Mode of entry	Numerical ability	Mean	Std. Error
Federal college of Education, Oyo	UTME	Poor	86.657	1.905
		Good	86.930	2.197
	NCE	Poor	93.066	4.216
		Good	92.856	7.319
Federal college of Education, Abeokuta	UTME	Poor	75.183	2.599
		Good	77.519	2.344
	NCE	Poor	76.009	2.490
		Good	76.596	4.219
Emmanuel Alayande College of education	UTME	Poor	84.750	3.265
		Good	83.391	1.720
	NCE	Poor	94.958	5.150
		Good	76.315	3.655

Table 18: ANOVA showing the significant main effects of Treatment on Students' Attitude to Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	1916.331	3	638.777	11.673	.000	.289
Pre Attitude	17.864	1	17.864	.326	.569	.004
Treatment	1794.251	2	897.126	16.394	.000	.276
Error	4706.069	86	54.722			
Total	6622.400	89				

(R-squared = 0.289, Adjusted R-Squared = 0.265)

Table 19: Table showing the Descriptive statistics of the Treatment group on Students' Attitude to Economics

Treatment groups	Mean	Std. Deviation	N
Federal College of Education, Oyo	87.5667	7.2191	30
Federal College of Education, Abeokuta	76.4333	6.6056	30
Emmanuel Alayande College of Education, Oyo	83.4000	8.1942	30
Total	82.4667	8.6261	90

Table 20: Scheffe Post-Hoc Multiple Comparison of the Treatment group on Students' Attitude to Economics

• Treatment groups	(J) Treatment groups	Mean difference	Std. Error	Sig.
Federal College of Education Oyo	Federal College of Education, Abeokuta	11.1333*	1.9026	.000
	Emmanuel AlayandeCollege of Education, Oyo	4.1667	1.9026	.097
Federal College of Education, Abeokuta	Federal College of Education Oyo	-11.1333*	1.9026	.000
	Emmanuel Alayande College of Education, Oyo	-6.9667*	1.9026	.002
Emmanuel Alayande College of Education, Oyo	Federal College of Education Oyo	-4.1667	1.9026	.097
	Federal College of Education, Abeokuta	6.9667*	1.9026	.002

Table 21: ANOVA showing the significant main effects of Mode of entry on Students' Attitude to Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	162.071	2	81.036	1.091	.340	.024
Pre Attitude	99.436	1	99.436	1.339	.250	.015
Mode of entry	39.992	1	39.992	.539	.465	.006
Error	6460.329	87	74.257			
Total	6622.400	89				

(R-squared = 0.024, Adjusted R-Squared = 0.002)

Table 22: Table showing the Descriptive statistics of Mode of entry on Students' Attitude to Economics

Mode of entry	Mean	Std. Deviation	N
UTME	82.9412	8.3913	68
NCE	81.0000	9.3656	22
otal	82.4667	8.6261	90

Table 23: ANOVA showing the significant main effects of Numerical ability on Students' Attitude to Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	141.953	2	70.977	.953	.390	.021
Pre Attitude	131.366	1	131.366	1.764	.188	.020
Numerical ability	19.874	1	19.874	.267	.607	.003
Error	6480.447	87	74.488			
Total	6622.400	89				

(R-squared = 0.021, Adjusted R-Squared = 0.001)

Table 24: Table showing the Descriptive statistics of Numerical ability on Students' Attitude to Economics

Numerical ability	Mean	Std. Deviation	N
Poor	82.8333	9.1915	42
Good	82.1458	8.1840	48
Total	82.4667	8.6261	90

Table 25: ANOVA showing the significant interaction effects of Treatment and Mode of entry on Students' Attitude to Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	2056.660	6	342.777	6.231	.000	.311
Pre Attitude	15.195	1	15.195	.276	.601	.003
Main effect						
Treatment	1716.973	2	858.486	15.606	.000	.273
Mode of entry	33.838	1	33.838	.615	.435	.007
2-way Interactions						
Treatment x Mode of entry	129.177	2	64.589	1.174	.314	.028
Error	4565.740	83	55.009			
Total	6622.400	89				

(R-squared = 0.311, Adjusted R-Squared = 0.261)

Table 26: Table showing the Descriptive statistics of Treatment group and Mode of entry on Students' Attitude to Economics

Treatment groups	Mode of entry	Mean	Std. Deviation	N
Federal college of Education, Oyo	UTME	86.7308	7.3297	26
	NCE	93.0000	3.2660	4
	Total	87.5667	7.2191	30
Federal college of Education, Abeokuta	UTME	76.5556	7.4693	18
	NCE	76.2500	5.3619	12
	Total	76.4333	6.6056	30
Emmanuel Alayande College of education	UTME	83.6250	7.5401	24
	NCE	82.5000	11.2561	6
	Total	83.4000	8.1942	30
Total	UTME	82.9412	8.3913	68
	NCE	81.0000	9.3656	22
	Total	82.4667	8.6261	90

Table 27: ANOVA showing the significant interaction effects of Treatment and Numerical ability on Students' Attitude to Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	2092.619	6	348.770	6.391	.000	.316
Pre Attitude	2.997	1	2.997	.055	.815	.001
Main effect						
Treatment	1736.239	2	868.119	15.907	.000	.277
Numerical ability	36.187	1	36.187	.663	.418	.008
2-way Interactions						
Treatment x Numerical ability	158.863	2	79.432	1.455	.239	.034
Error	4529.781	83	54.576			
Total	6622.400	89				

(R-squared = .316, Adjusted R-Squared = 0.267)

Table 28: Table showing the Descriptive statistics of Treatment group and Numerical ability on Students' Attitude to Economics

Treatment groups	Numerical ability	Mean	Std. Deviation	N
Federal college of Education, Oyo	Poor	87.6667	7.0042	18
	Good	87.4167	7.8446	12
	Total	87.5667	7.2191	30
Federal college of Education, Abeokuta	Poor	75.7059	7.1830	17
	Good	77.3846	5.9096	13
	Total	76.4333	6.6056	30
Emmanuel Alayande College of education	Poor	87.7143	7.6749	7
	Good	82.0870	8.0448	23
	Total	83.4000	8.1942	30
Total	Poor	82.8333	9.1915	42
	Good	82.1458	8.1840	48
	Total	82.4667	8.6261	90

Table 29: ANOVA showing the significant interaction effects of Mode of entry and Numerical ability on Students' Attitude to Economics

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta^2/ Effect Size
Corrected Model	255.503	4	63.876	.853	.496	.039
Pre Attitude	113.871	1	113.871	1.520	.221	.018
Main effect						
Mode of entry	70.707	1	70.707	.944	.334	.011
Numerical ability	80.313	1	80.313	1.072	.303	.012
2-way Interactions						
Mode x Numerical ability	61.021	1	61.021	.815	.369	.009
Error	6366.897	85	74.905			
Total	6622.400	89				

(R-squared = .039, Adjusted R-Squared = .007)

Table 30: showing the Descriptive statistics of Mode of entry and Numerical ability on Students' Attitude to Economics

Mode of entry	Numerical ability	Mean	Std. Deviation	N
UTME	Poor	83.0357	8.8756	28
	Good	82.8750	8.1498	40
	Total	82.9412	8.3913	68
NCE	Poor	82.4286	10.1278	14
	Good	78.5000	7.8376	8
	Total	81.0000	9.3656	22
Total	Poor	82.8333	9.1915	42
	Good	82.1458	8.1840	48
	Total	82.4667	8.6261	90